USER MANUAL

ATEQ PRIMUS F SERIES

F620 / F610 / F670

Version 1.04

(No contractual photos)

www.ateq.com

Reference: RF-28300C-U

REVISION OF THE PRIMUS F SERIES MANUAL

Due to continuing improvements, the information contained in this user manual, the features and design of this device are subject to be changed without prior notice.

Edition/Revision	**Reference**	**Date** (week/year)	**Chapters updated**
First edition	RF-28300A-U	16/2013	-----
Second edition	RF-28300B-U	23/2013	Evolution of the firmware to v1.01.
Third edition	RF-28300C-U	22/2014	Evolution of the firmware to v1.04.

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FUNCTIONS MANAGEMENT

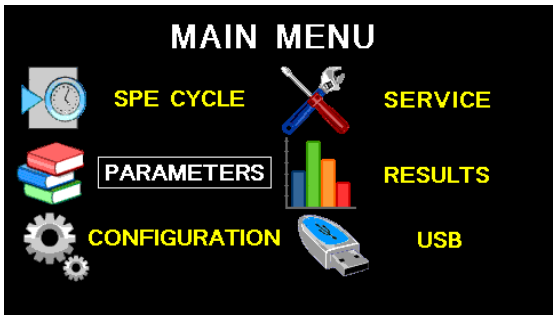
The extended menu functions allow personalization and add options to the test cycle.

For ease of reading, these functions are hidden by default. To display the functions, follow the process below.

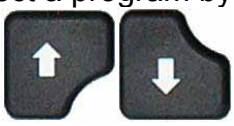
Process to display a function:

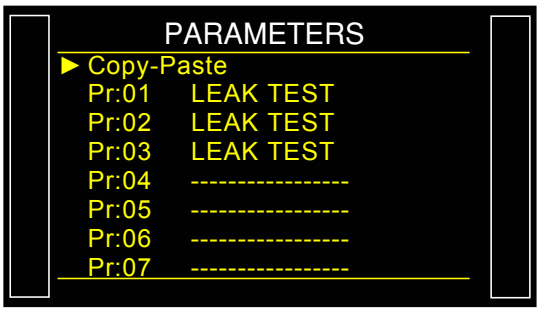
From the cycle menu, display the main menu by pressing the OK or ESC keys.

Then select the menu

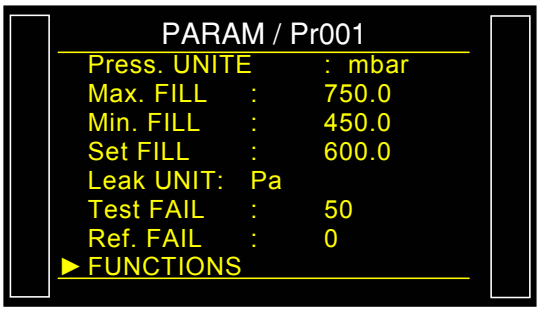


Select a program by using the keys.

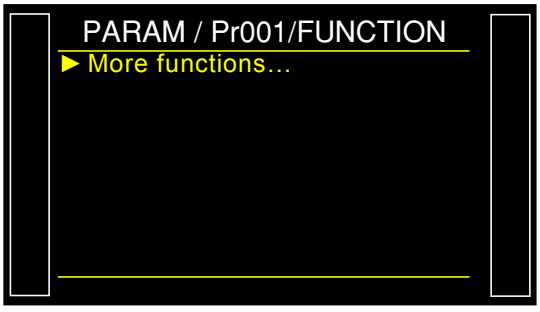




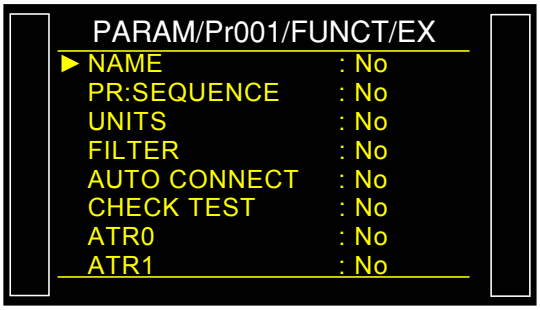
Then down to the end of the parameters and select the **FUNCTIONS** menu.



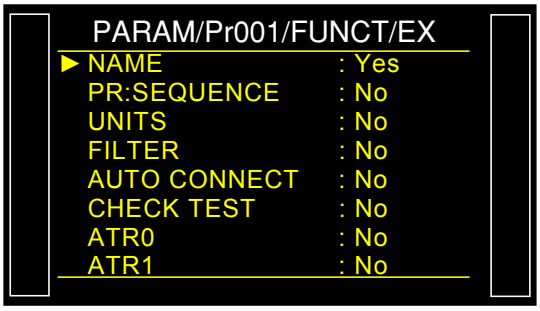
The functions menu is displayed, the validated functions. Enter in the "**More functions…**" menu.



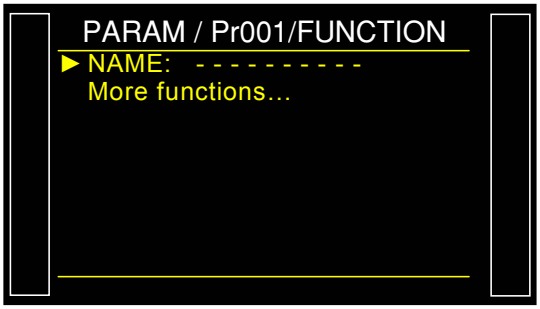
The available functions for the device are displayed.



To validate a function, select it, press OK, the cursor slide to the right hand, with the keys, select "**Yes**", then validate with the OK key, the cursor back to the left hand.



The validated function is now displayed, it remains to be configured. (See sheets corresponding to the functions).



1. MENUS TREE

1.1. SPECIAL CYCLES MENU

SPECIAL CYCLES >

- None
- Check Pressurre 1* / Check P1 Reg 1** — *Service Cycle = Yes*
- Check P1 Reg 2** — *Service Cycle = Yes*
- Leak Sensor Check — *Service Cycle = Yes*
- Auto Test
- Regulator X adjust***
- Infinite Fill
- Piezo Auto Zero
- Custom Unit Learn
- Custom Unit Check
- Chck+Lrn Cust. Unit
- ATR Learning Cycle > ATR TIME > 0.0 S
  - Confirm
- Sd Prt Pass Learn
- Sd Prt Fail Learn
- ATR + Custom Learn
- Check Test Result
- Volume Comp.
- Automatique volume

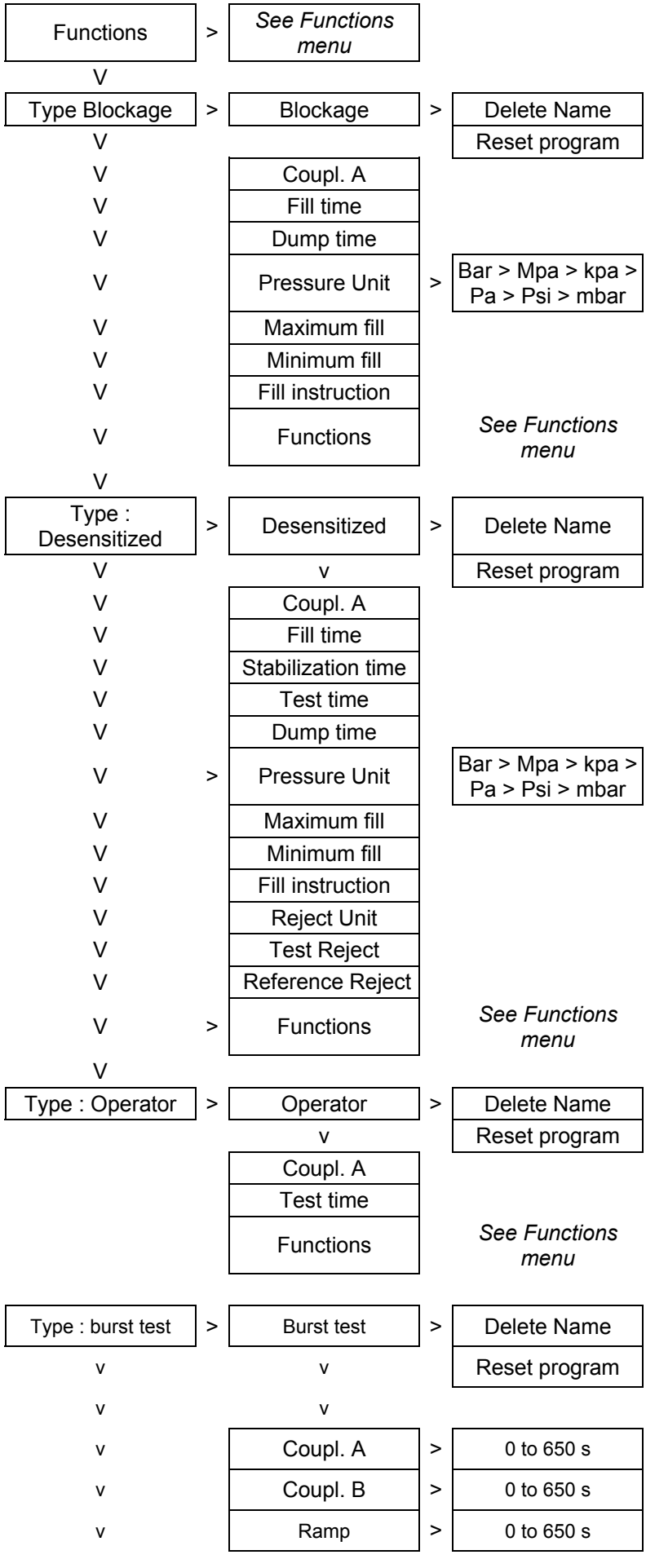
** 1regulator option*

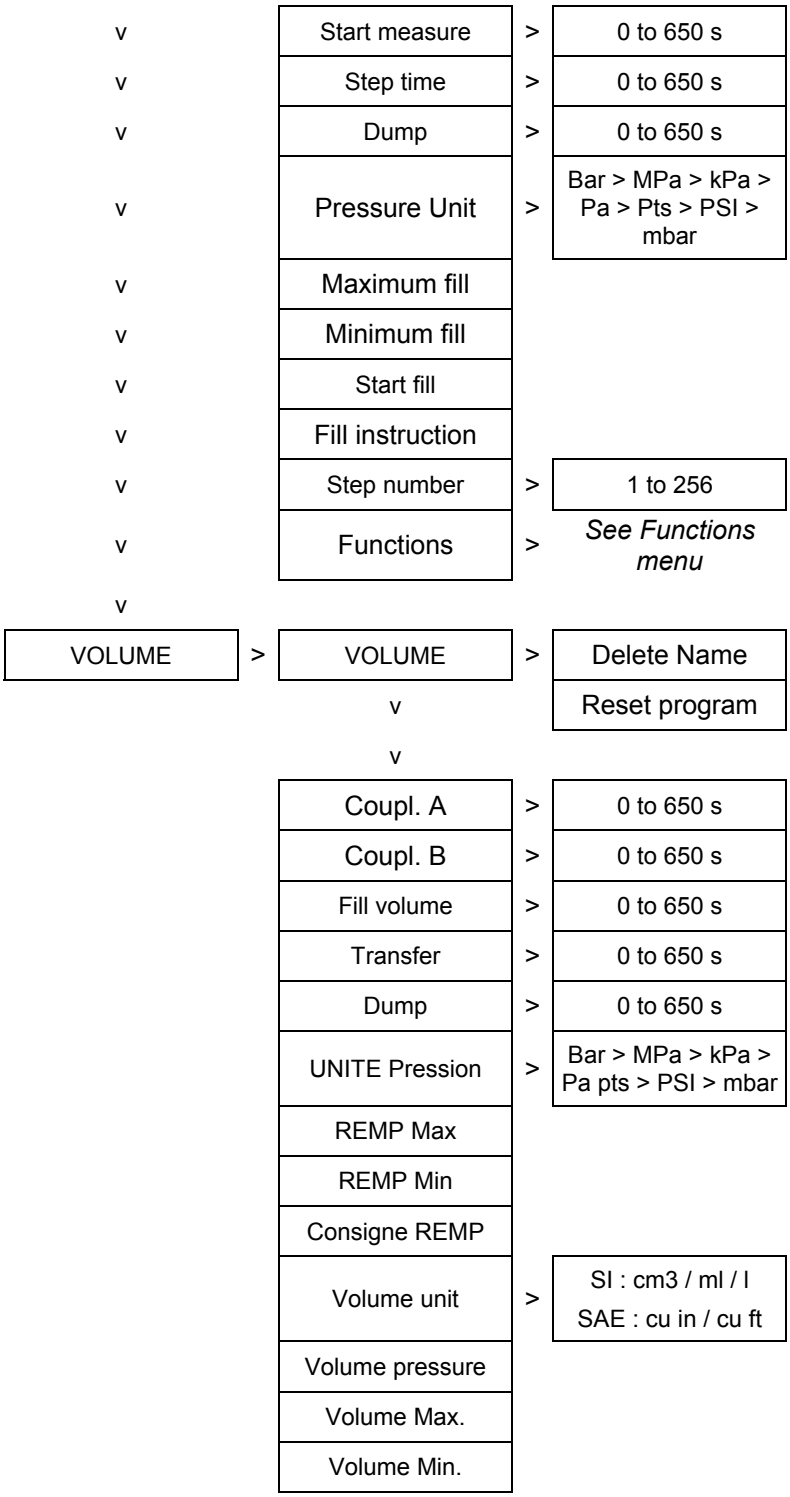
*** 2 regulators option*

**** X = 1 or 2 following the regulators number option.*

1.2. PARAMETERS MENU

PARAMETERS						
Copy-Paste	>	Copy				
V		Paste				
V		V				
Programs 01 to 128	>	Type: Leak test	>	Leak test	>	Delete Name
				v		Reset program
				Auto Param		
				Coupl. A	>	0 > 650 s
				Fill time	>	0 > 650 s
				Stabilization time	>	0 > 650 s
				Test time	>	0 > 650 s
				Dump time	>	0 >à 650 s
				Press. UNIT	>	Bar > MPa > Kpa > Pa > Pts > Psi > Mbar
				Max PreFILL		
				Max FILL		
				Min FILL		
				Set PreFILL		
				Set FILL		
				LeakUnit	>	SI > Pa > Pa/s > Pa(Hr) > Pa(Hr)/s > cm^3/s > cm^3/mn > cm^3/h > mm^3/s > ml/s > ml/min > ml/h > mmce > mmce/s > pts > Cal-Pa > Cal-Pa/s
				V		USA > Pa > Pa/s > Pa(Hr) > Pa(Hr)/s > cc/min > cc/s > cc/h > in^3/s > in^3/min > in^3/h > ft^3/s > ft^3/min > ft^3/h > mmce > mmce/s > Pts
				Pa display	>	No / Yes
				V		
				Rejet Calc	>	Pa > Pa/s
				V		
				Volume Unit	>	L > ml > mm^3 > cm^3
				V		
				Volume	>	0,001 > 9999
				Test reject		
				Reference reject		


Functions
> See Functions menu
Type Blockage
> Blockage
> Delete Name
Reset program
Coupl. A
Fill time
Dump time
Pressure Unit
> Bar > Mpa > kpa > Pa > Psi > mbar
Maximum fill
Minimum fill
Fill instruction
Functions
See Functions menu
Type : Desensitized
> Desensitized
> Delete Name
Reset program
Coupl. A
Fill time
Stabilization time
Test time
Dump time
> Pressure Unit
Bar > Mpa > kpa > Pa > Psi > mbar
Maximum fill
Minimum fill
Fill instruction
Reject Unit
Test Reject
Reference Reject
> Functions
See Functions menu
Type : Operator
> Operator
> Delete Name
Reset program
Coupl. A
Test time
Functions
See Functions menu
Type : burst test
> Burst test
> Delete Name
Reset program
Coupl. A
> 0 to 650 s
Coupl. B
> 0 to 650 s
Ramp
> 0 to 650 s

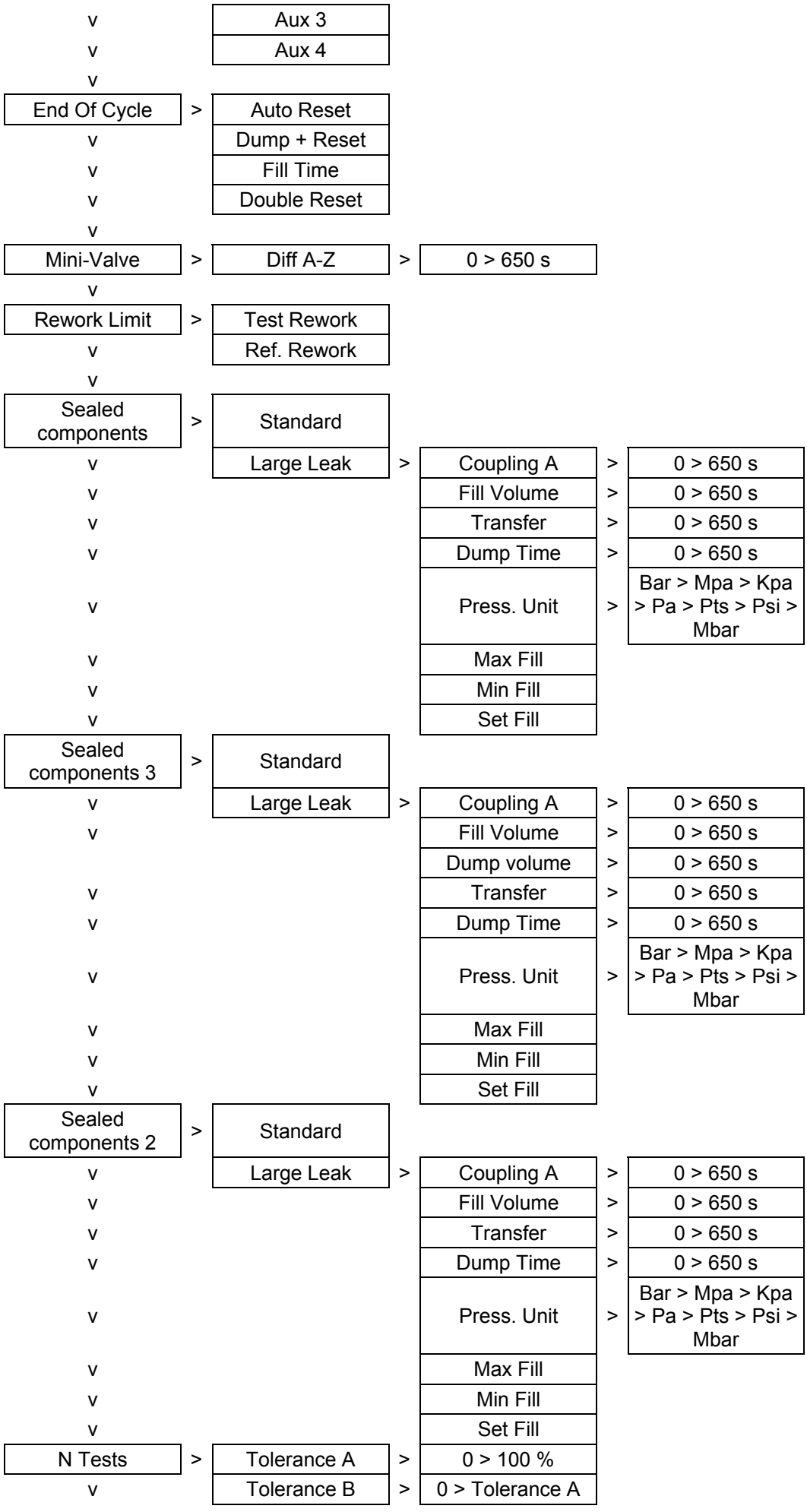

Start measure
0 to 650 s
Step time
0 to 650 s
Dump
0 to 650 s
Pressure Unit
Bar > MPa > kPa > Pa > Pts > PSI > mbar
Maximum fill
Minimum fill
Start fill
Fill instruction
Step number
1 to 256
Functions
See Functions menu
VOLUME
VOLUME
Delete Name
Reset program
Coupl. A
0 to 650 s
Coupl. B
0 to 650 s
Fill volume
0 to 650 s
Transfer
0 to 650 s
Dump
0 to 650 s
UNITE Pression
Bar > MPa > kPa > Pa pts > PSI > mbar
REMP Max
REMP Min
Consigne REMP
Volume unit
SI : cm3 / ml / l
SAE : cu in / cu ft
Volume pressure
Volume Max.
Volume Min.

1.3. FUNCTIONS MENUS

1.3.1. Available functions for leak test

FUNCTIONS						
	Name					
	Pr: Sequence	Next Prog.	>	XX+		
	v	Inter-Cyc	>	0,0 S		
	v	All Results	>	No / Yes		
	v	Pass	>	No / Yes		
	v	T Fail	>	No / Yes		
	v	R Fail	>	No / Yes		
	v	Alarm	>	No / Yes		
	v	Pressure Out	>	No / Yes		
	v	Reworkable	>	No / Yes		
	v	Test Check	>	No / Yes		
	v					
	Units	> SI				
	v	USA				
	v	Custom		Leakunit	>	Cal-Pa > Cal-Pa/S > Pa > Pa/S > Pa (Hr) > Pa (Hr)/S
	v			Drift Unit	>	0 > 100 %
	v			Name		
	Filtering	> 0 > 650 s				
	v					
	Automatic Connectors	> Coupling A	>	0 > 650 s		
	v	Coupling B	>	0 > 650 s		
	Test Check	Measure	>	0.0		
	v	Max Value	>	0.0		
	v	% Drift	>	20		
	v	Check time	>	0.3 s		
	v					
	ATR0	> Start		-Fs To +Fs		
	v	Transient		-Fs To +Fs		
	v	% Drift		0 > 100		
	v	Drift		0 > 200		
	v					
	ATR1	> Start	>	-Fs To +Fs		
	ATR2	Transient	>	-Fs To +Fs		
	ATR3	% Drift	>	0 > 100		
	v	Drift		0 > 200		
	v					
	Prefill	Type P.Remp		Standard		Max Prefill
	v	v		v		Set Prefill

v	v	v		Pre-Fill
v	v	v		Pre Dump
v	v	v		
v	v	Instruction		Set Prefill
v	v	v		Pre-Fill
v	v	v		Pre Dump
v	v	v		
v	v	Ballistic		Set Prefill
v	v	v		Pre-Fill
v	v	v		Pre Dump
v	v	v		
v	v	Fill Ramp		Max Prefill
v	v			Set Prefill
v	v			Pre-Fill
v	v			Pre Dump
v	Pre fill regulator	>	1	
v			2	
v				
Fill Mode	Fill Mode		Standard	Set Fill
v	v		Instruction	Set Fill
v	v		Ballistic	Set Fill
v	v		Fill Ramp	Set Fill
v	v		Fill Adjust	Set Fill
v	v			Time Adj.
v	Fill regulator	>	1	
v			2	
Dump Off	>	No / Yes		
v				
External dump	>	Closed	*One choice for all the programs*	
v		Open	*One choice for all the programs*	
	Mode	>	Continuous	*Closed only*
			Time	
v				
Valve Codes	Ext. 1		Yes	
v	Delay Ext		0.0 S	*Same time for all the programs*
v	Time Ext1		0.0 S	
v	Ext. 2			
v	Ext. 3			
v	Ext. 4			
v	Ext. 5			
v	Ext. 6			
v	Int. 1			
v	Int. 2			
v				
24V outputs	> Aux 1	>	No / Yes	
v	Delay Aux	>	0 > 650 s	
v	Time Aux1	>	0 > 650 s	
v	Aux 2			


Aux 3
Aux 4
End Of Cycle
Auto Reset
Dump + Reset
Fill Time
Double Reset
Mini-Valve
Diff A-Z
0 > 650 s
Rework Limit
Test Rework
Ref. Rework
Sealed components
Standard
Large Leak
Coupling A
0 > 650 s
Fill Volume
0 > 650 s
Transfer
0 > 650 s
Dump Time
0 > 650 s
Press. Unit
Bar > Mpa > Kpa > Pa > Pts > Psi > Mbar
Max Fill
Min Fill
Set Fill
Sealed components 3
Standard
Large Leak
Coupling A
0 > 650 s
Fill Volume
0 > 650 s
Dump volume
0 > 650 s
Transfer
0 > 650 s
Dump Time
0 > 650 s
Press. Unit
Bar > Mpa > Kpa > Pa > Pts > Psi > Mbar
Max Fill
Min Fill
Set Fill
Sealed components 2
Standard
Large Leak
Coupling A
0 > 650 s
Fill Volume
0 > 650 s
Transfer
0 > 650 s
Dump Time
0 > 650 s
Press. Unit
Bar > Mpa > Kpa > Pa > Pts > Psi > Mbar
Max Fill
Min Fill
Set Fill
N Tests
Tolerance A
0 > 100 %
Tolerance B
0 > Tolerance A

Peak Hold	>	No / Yes			
v					
Ref. Volume	>	Volume Référence			
v					
Stamping		Duration			
v		All Results			
v		Pass			
v		T Fail			
v		R Fail			
v		Alarm			
v		Pressure Out			
v					
Temp. Corr. 1		Correction		0 > 200 %	
v		Test Time		0,1 > 650 S	
v		Offset		0 > FS	
v					
Sign	>	No / Yes	>	*Pa or cm^3/min*	
v					
Flow Level	>	No / Yes	>	*Pa or cm^3/min*	
v					
No Negative	>	No / Yes	>	*Pa or cm^3/min*	
v					
Absolute		No / Yes			
v					
Synchro test	>	No / Yes		*Ex IN7 test*	
v					
Bypass	>	Fill			
v		Pfill			
v		Pfill + Fill			
v					
Display Mode	>	XXXX			
v		XXX.X			
v		XX.XX			
v		X.XXX			
v					
Buzzer	>	Pass part	>	No / Yes	*10 beeps*
v		Fail part	>	No / Yes	*Long beep*
v		Alarm	>	No / Yes	*Long beep*
v		End of cycle	>	No / Yes	*10 beeps*
v					
Cut Off	>	% Cut Off	>	0 > 100%	
v					
ATF	>	ATF time	>	0,1 > 650 S	

1.3.2. Available functions for blockage test

FUNCTIONS						
	Name					
	Pr: Sequence	Next Prog.	>	XX+		
	v	Inter-Cyc	>	0,0 S		
	v	All Results	>	No / Yes		
	v	Pass	>	No / Yes		
	v	Fail	>	No / Yes		
	v	Alarm	>	No / Yes		
	v	Pressure Out	>	No / Yes		
	v					
	Automatic Connectors	> Coupling A	>	0 > 650 s		
	v	Coupling B	>	0 > 650 s		
	v					
	Prefill	Type P.Remp		Standard		Set Prefill
	v	v		v		Pre-Fill
	v	v		v		Pre Dump
	v	v		v		
	v	Pre fill regulator	>	1		
	v			2		
	v					
	Fill Mode	Fill Mode		Standard		Set Fill
	v	v				
	v	Fill regulator	>	1		
	v			2		
	v					
	Permanent dump	> No / Yes				
	v					
	Dump Off	> No / Yes				
	v					
	External dump	> Closed		*One choice for all the programs*		
	v	Open		*One choice for all the programs*		
		Mode	>	Continuous		*Closed only*
				Time		
	v					
	Valve Codes	Ext. 1		No / Yes		
	v	Delay Ext		0.0 S		*Same time for all the programs*
	v	Time Ext1		0.0 S		
	v	Ext. 2				
	v	Ext. 3				
	v	Ext. 4				
	v	Ext. 5				
	v	Ext. 6				
	v	Int. 1				
	v	Int. 2				

24v Outputs	>	Aux 1	>	No / Yes
v		Delay Aux	>	0 > 650 s
v		Time Aux1	>	0 > 650 s
v		Aux 2		
v		Aux 3		
v		Aux 4		
v				
End Of Cycle		Auto Reset		
v		Dump + Reset		
v		Fill Time		
v		Double Reset		
v				
Mini-Valve		Diff A-Z	>	0 > 650 s
v				
Stamping		Duration		
v		All Results		
v		Pass		
v		Fail		
v		Alarm		
v		Pressure Out		
v				
Buzzer	>	Pass part	>	No / Yes
		Fail part	>	No / Yes
		Alarm	>	No / Yes
		End of cycle	>	No / Yes

1.3.3. Available functions for Desensitized test

FUNCTIONS						
	Name					
	Pr: Sequence	Next Prog.	>	XX+		
	v	Inter-Cyc	>	0,0 S		
	v	All Results	>	No / Yes		
	v	Pass	>	No / Yes		
	v	Fail	>	No / Yes		
	v	Alarm	>	No / Yes		
	v	Pressure Out	>	No / Yes		
	v	Reworkable	>	No / Yes		
	v	Test Check	>	No / Yes		
	v					
	Units	>	SI			
	v		USA			
	v		Custom	Leakunit	>	Cal-Pa > Cal-Pa/S > Pa > Pa/S > Pa (Hr) > Pa (Hr)/S
	v			Drift Unit	>	0 > 100 %
	v			Name		
	Automatic Connectors	>	Coupling A	>	0 > 650 s	
	v		Coupling B	>	0 > 650 s	
	v					
	ATR0	>	Start	-Fs To +Fs		
	v		Transient	-Fs To +Fs		
	v		% Drift	0 > 100		
	v		Drift	0 > 200		
	v					
	ATR1	>	Start	>	-Fs To +Fs	
	ATR2		Transient	>	-Fs To +Fs	
	ATR3		% Drift	>	0 > 100	
	v		Drift		0 > 200	
	v					
	Prefill	Type P.Remp	Standard	Max Prefill		
	v	v	v	Set Prefill		
	v	v	v	Pre-Fill		
	v	v	v	Pre Dump		
	v	v	v			
	v	v	Instruction	Set Prefill		
	v	v	v	Pre-Fill		
	v	v	v	Pre Dump		
	v	v	v			
	v	v	Ballistic	Set Prefill		
	v	v	v	Pre-Fill		

v	v	v		Pre Dump
v	v	v		
v	v	Fill Ramp		Max Prefill
v	v			Set Prefill
v	v			Pre-Fill
v	v			Pre Dump
v	Pre fill regulator	>	1	
v			2	
v				
Fill Mode	Fill Mode		Standard	Set Fill
v	v		Instruction	Set Fill
v	v		Ballistic	Set Fill
v	v		Fill Ramp	Set Fill
v	v		Fill Adjust	Set Fill
v	v			Time Adj.
v	Fill regulator	>	1	
v			2	
Dump Off	>	No / Yes		
v				
External dump	>	Closed	*One choice for all the programs*	
v		Open	*One choice for all the programs*	
		Mode	> Continuous	*Closed only*
			Time	
v				
Valve Codes		Ext. 1	Yes	
v		Delay Ext	0.0 S	*Same time for all the programs*
v		Time Ext1	0.0 S	
v		Ext. 2		
v		Ext. 3		
v		Ext. 4		
v		Ext. 5		
v		Ext. 6		
v		Int. 1		
v		Int. 2		
v				
24V outputs	>	Aux 1	> No / Yes	
v		Delay Aux	> 0 > 650 s	
v		Time Aux1	> 0 > 650 s	
v		Aux 2		
v		Aux 3		
v		Aux 4		
v				
End Of Cycle	>	Auto Reset		
v		Dump + Reset		
v		Fill Time		
v		Double Reset		
v				
Mini-Valve	>	Diff A-Z	> 0 > 650 s	

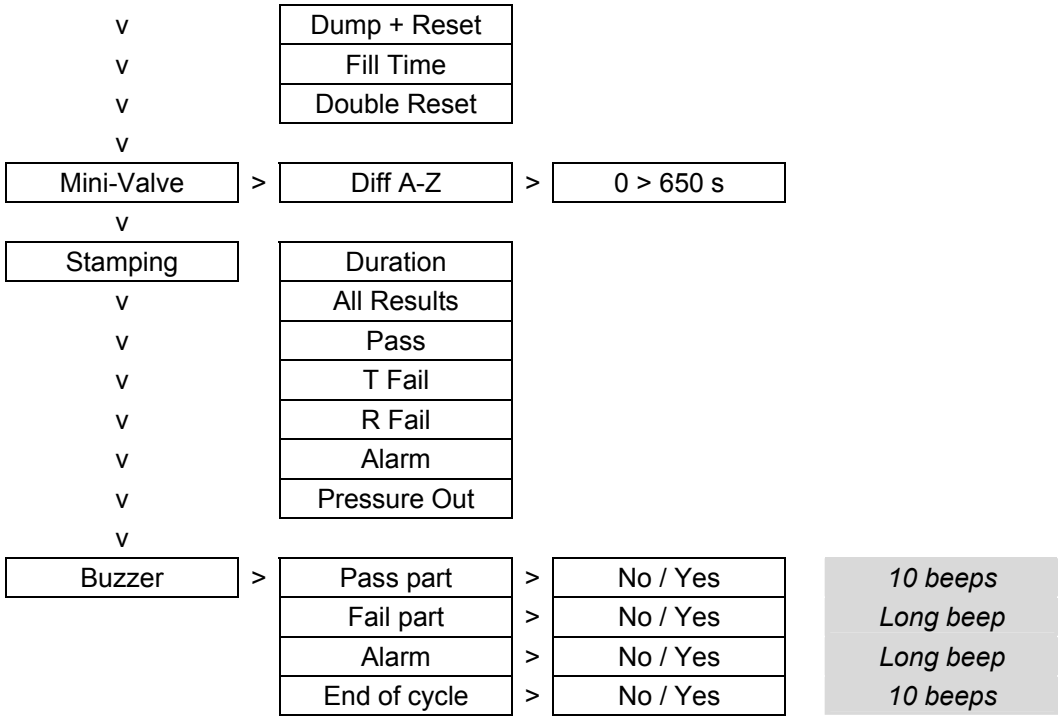
Rework Limit	>	Test Rework			
v		Ref. Rework			
v					
Peak Hold	>	No / Yes			
v					
Stamping		Duration			
v		All Results			
v		Pass			
v		T Fail			
v		Alarm			
v		Pressure Out			
v					
Sign	>	No / Yes	>	*Pa or cm^3/min*	
v					
Flow Level	>	No / Yes	>	*Pa or cm^3/min*	
v					
No Negative	>	No / Yes	>	*Pa or cm^3/min*	
v					
Absolute		No / Yes			
v					
Bypass	>	Fill			
v		Pfill			
v		Pfill + Fill			
v					
Display Mode	>	XXXX			
v		XXX.X			
v		XX.XX			
v		X.XXX			
v					
Buzzer	>	Pass part	>	No / Yes	*10 beeps*
v		Fail part	>	No / Yes	*Long beep*
v		Alarm	>	No / Yes	*Long beep*
v		End of cycle	>	No / Yes	*10 beeps*
v					
Cut Off	>	% Cut Off	>	0 > 100%	
v					
ATF	>	ATF time	>	0,1 > 650 S	

1.3.4. Available functions for operator test

FUNCTIONS						
	Name					
	Pr: Sequence		Next Prog.	>	XX+	
	v		Inter-Cyc	>	0,0 S	
	v		All Results	>	No / Yes	
	v		Pass	>	No / Yes	
	v		Fail	>	No / Yes	
	v					
	Automatic Connectors	>	Coupling A	>	0 > 650 s	
	v		Coupling B	>	0 > 650 s	
	v					
	Valve Codes		Ext. 1		Yes	
	v		Delay Ext		0.0 S	*Same time for all the programs*
	v		Time Ext1		0.0 S	
	v		Ext. 2			
	v		Ext. 3			
	v		Ext. 4			
	v		Ext. 5			
	v		Ext. 6			
	v		Int. 1			
	v		Int. 2			
	v					
	24V outputs	>	Aux 1	>	No / Yes	
	v		Delay Aux	>	0 > 650 s	
	v		Time Aux1	>	0 > 650 s	
	v		Aux 2			
	v		Aux 3			
	v		Aux 4			
	v					
	Stamping		Duration			
	v		All Results			
	v		Pass			
	v		Fail			
	v		Alarm			
	v		Pressure Out			
	v					
	Buzzer	>	Pass part	>	No / Yes	*10 beeps*
	v		Fail part	>	No / Yes	*Long beep*
	v		Alarm	>	No / Yes	*Long beep*
	v		End of cycle	>	No / Yes	*10 beeps*

1.3.5. Available functions for Burst test

FUNCTIONS	Name				
	Burst = OK	>	No / Yes		
	Pr: Sequence	>	Next Prog.	>	XX+
	v		Inter-Cyc	>	0,0 S
	v		All Results	>	No / Yes
	v		Pass	>	No / Yes
	v		T Fail	>	No / Yes
	v		R Fail	>	No / Yes
	v		Alarm	>	No / Yes
	v		Pressure Out	>	No / Yes
	v		Reworkable	>	No / Yes
	v		Test Check	>	No / Yes
	v				
	Automatic Connectors	>	Coupling A	>	0 > 650 s
	v		Coupling B	>	0 > 650 s
	v		v		
	Fill Mode		Fill regulator	>	1
	v				2
	v				
	External dump	>	Closed		*One choice for all the programs*
	v		Open		*One choice for all the programs*
			Mode	>	Continuous — *Closed only*
					Time
	v				
	Valve Codes		Ext. 1		Yes
	v		Delay Ext		0.0 S — *Same time for all the programs*
	v		Time Ext1		0.0 S
	v		Ext. 2		
	v		Ext. 3		
	v		Ext. 4		
	v		Ext. 5		
	v		Ext. 6		
	v		Int. 1		
	v		Int. 2		
	v				
	24V outputs	>	Aux 1	>	No / Yes
	v		Delay Aux	>	0 > 650 s
	v		Time Aux1	>	0 > 650 s
	v		Aux 2		
	v		Aux 3		
	v		Aux 4		
	v				
	End Of Cycle	>	Auto Reset		


Dump + Reset
Fill Time
Double Reset
Mini-Valve
Diff A-Z
0 > 650 s
Stamping
Duration
All Results
Pass
T Fail
R Fail
Alarm
Pressure Out
Buzzer
Pass part
No / Yes
10 beeps
Fail part
No / Yes
Long beep
Alarm
No / Yes
Long beep
End of cycle
No / Yes
10 beeps

1.3.6. Available functions for volume test

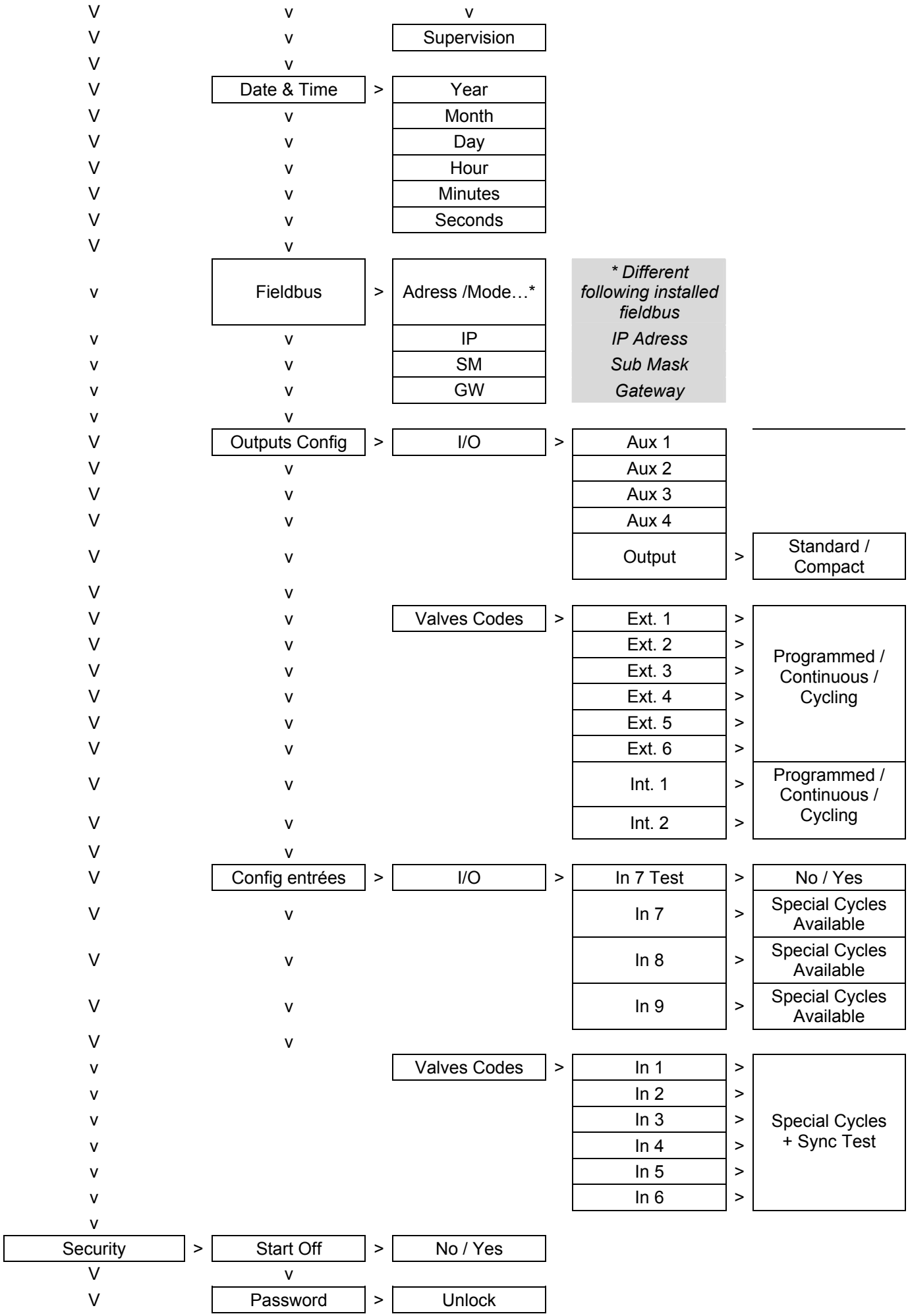
FUNCTIONS						
	Name					
	Pr: Sequence	Next Prog.	>	XX+		
	v	Inter-Cyc	>	0,0 S		
	v	All Results	>	No / Yes		
	v	Pass	>	No / Yes		
	v	Fail	>	No / Yes		
	v	Alarm	>	No / Yes		
	v	Pressure Out	>	No / Yes		
	v	Reworkable	>	No / Yes		
	v	Test Check	>	No / Yes		
	v					
	Units	> SI				
	v	USA				
	v	Custom		Leakunit	>	Cal-Pa > Cal-Pa/S > Pa > Pa/S > Pa (Hr) > Pa (Hr)/S
	v			Drift Unit	>	0 > 100 %
	v			Name		
	v					
	Automatic Connectors	> Coupling A	>	0 > 650 s		
	v	Coupling B	>	0 > 650 s		
	v					
	Fill Mode	Fill Mode		Standard		Set Fill
	v	v		Instruction		Set Fill
	v	v		Ballistic		Set Fill
	v	v		Fill Ramp		Set Fill
	v	v		Fill Adjust		Set Fill
	v	v				Time Adj.
	v	Fill regulator	>	1		
	v			2		
	Dump Off	> No / Yes				
	v					
	External dump	> Closed		*One choice for all the programs*		
	v	Open		*One choice for all the programs*		
		Mode	>	Continuous		*Closed only*
				Time		
	v					
	Valve Codes	Ext. 1		Yes		
	v	Delay Ext		0.0 S		*Same time for all the programs*
	v	Time Ext1		0.0 S		
	v	Ext. 2				
	v	Ext. 3				
	v	Ext. 4				

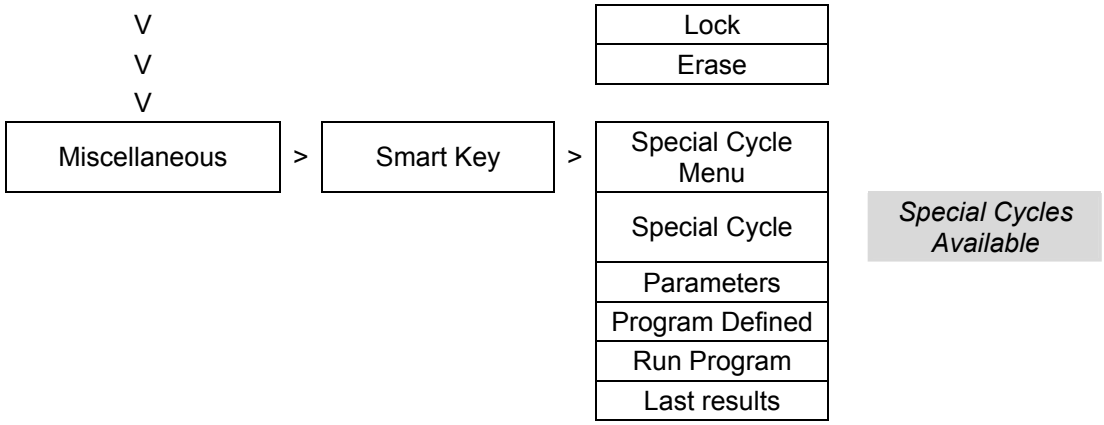
v		Ext. 5				
v		Ext. 6				
v		Int. 1				
v		Int. 2				
v						
24V outputs	>	Aux 1	>	No / Yes		
v		Delay Aux	>	0 > 650 s		
v		Time Aux1	>	0 > 650 s		
v		Aux 2				
v		Aux 3				
v		Aux 4				
v						
Stamping		Duration				
v		All Results				
v		Pass				
v		Fail				
v		Alarm				
v		Pressure Out				
v						
Buzzer	>	Pass part	>	No / Yes		*10 beeps*
		Fail part	>	No / Yes		*Long beep*
		Alarm	>	No / Yes		*Long beep*
		End of cycle	>	No / Yes		*10 beeps*

1.4. CONFIGURATION MENU

Configuration							
Language		French					
V		English					
v							
Automatic Volume	>	Fill	>	0 > 650 s			
v		Transfer	>	0 > 650 s			
v		Dump	>	0 > 650 s			
v		Volume Unit					
v		Ref Volume					
v		Pressur Volume					
v		Internal Ref Vol					
v		Internal Test Volume					
v		No Volume					
v							
Pneumatic	>	Electronic Regulator	>	None			
v		v		Regulator 1 P.E.			
v		v		Regulator 2 P.E.			
v		v		All			
v		v					
v		Regulator Contrl	>	Auto			
v		v		Ext.			
v		v					
v		Permanent Regulator	>	No / Yes			
v		v					
v		Piezzo Auto-zero	>	Nb Minutes			
v		v		Nb Cycles			
v		v					
v		Short Auto-zero	>	No / Yes	>	0 > 650 s	
v		v					
v		Pressure Unit	>	Bar / Mb / Psi / Pts / Pa / Kpa / Mpa			
v		v					
v		Blow		Regulator 1 oo 2	>	Max Blow	
v		v		v		Min Blow	
v		v		v		Blow Instruction	
v		Dump Level		Pressure			
v							
Automatism	>	USB	>	Printer	>	Print frame	>	Pressure
V		v		v		v		Prog name
V		v		v		v		Date & Time
V		v		v		v		Lines before

V	v	v	v			Lines after
V	v	v	v			Inter line
V	v	v	v			Form feed
V	v	v	v			
v	v	v	Sending Conditions			All results
v	v	v	v			Pass part
v	v	v	v			Test fail
v	v	v	v			Reference fail
v	v	v	v			Alarm
v	v	v	v			Pressure out
v	v	v	v			Reworkable
v	v	v	v			Test check
v	v	v	v			
v	v	v	Export	>		No / Yes
v	v	v	Print Parameters			
v	v	Supervision				
v	v					
V	RS232	> Printer	> RS Parameters	>		Speed 4800 – 9600 – 19200 – 28800 – 38400 – 57600 - 115200
V	v	v	v			1st/7 Bits/0 1st/7 Bits/1 1st/7 Bits/Even 1st/7 Bits/Odd 1st/8 Bits/None 1st/8 Bits/0 1st/8 Bits/1 1st/8 Bits/Even 1st/8 Bits/Odd
V	v	v	v			
V	v	v	Frame	>		Pressure
V	v	v	v			Prog name
V	v	v	v			Date & Time
V	v	v	v			Lines before
V	v	v	v			Lines after
V	v	v	v			Inter line
V	v	v	v			Form feed
V	v	v	v			
V	v	v	Sending Conditions			All results
V	v	v	v			Pass part
V	v	v	v			Test fail
V	v	v	v			Reference fail
V	v	v	v			Alarm
V	v	v	v			Pressure out
V	v	v	v			Reworkable
V	v	v	v			Test check
V	v	v	v			
V	v	v	Export	>		No / Yes
V	v	v	Print Parameters			


Supervision
Date & Time
Year
Month
Day
Hour
Minutes
Seconds
Fieldbus
Adress /Mode…*
* Different following installed fieldbus
IP
IP Adress
SM
Sub Mask
GW
Gateway
Outputs Config
I/O
Aux 1
Aux 2
Aux 3
Aux 4
Output
Standard / Compact
Valves Codes
Ext. 1
Ext. 2
Ext. 3
Ext. 4
Ext. 5
Ext. 6
Programmed / Continuous / Cycling
Int. 1
Int. 2
Programmed / Continuous / Cycling
Config entrées
In 7 Test
No / Yes
In 7
Special Cycles Available
In 8
Special Cycles Available
In 9
Special Cycles Available
Valves Codes
In 1
In 2
In 3
In 4
In 5
In 6
Special Cycles + Sync Test
Security
Start Off
No / Yes
Password
Unlock


V
V
V
Miscellaneous
>
Smart Key
>
Lock
Erase
Special Cycle Menu
Special Cycle
Parameters
Program Defined
Run Program
Last results
Special Cycles Available

1.5. SERVICE MENU

Service				
Reset parameters	>	No / Yes		
v				
CAN Status	>	Sensor		
V		I/O		
V		Valves Code		
V		I/O (2)		
V		Valves Code (2)		
v				
I/O State	>	Sensor	>	Out 1 > 4 / DAC
V		I/O	>	In 1 > In 9 / Out 1 > Out 9
V		Valves Code	>	Out 1 > Out 8
V		I/O (2)		
V		Valves Code (2)		
v				
Valve counter	>	Partial		
V		Total		
V		Partial reset		
v				
Device Info	>	S/N		
v		Texts		*Texts version*
v		Soft Info		
v		Boot Info		
v		Settings Info		
v				
Service Cycles	>	No / Yes		

1.6. RESULTS MENU

Results		
Save on	>	None
V		Internal
V		USB
V		
Last Results	>	*Display of the 6 lasts results*
V		Results reset
V		
Statistics	>	Program
		Total
		Pass
		Test fail
		Reference fail
		Reworkable
		Alarm
		Print all statistics
		reset all statistics

1.7. MENUS USB

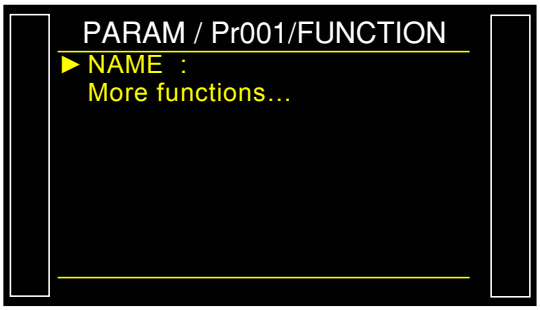
USB
Save parameters
Restore parameters

NAME FUNCTION

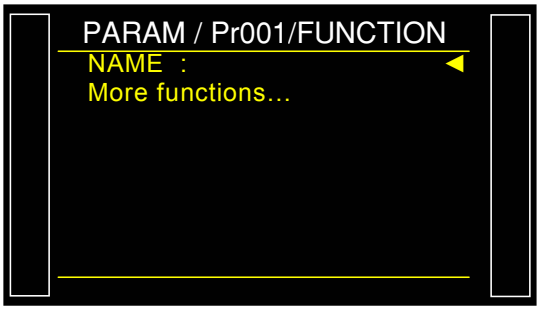
This function allows identifying a program, for example the name of the tested part.

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

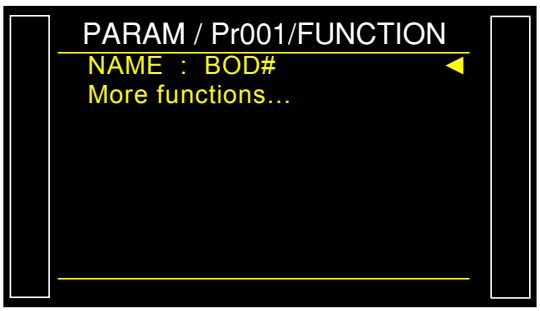


By using the ↑ ↓ arrows, select the desired characters, switch to the following with the OK key.

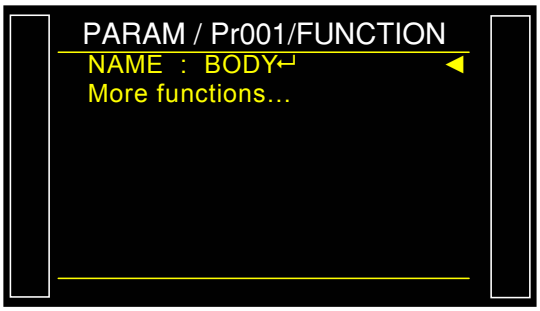


Repeat the operation until having the entire name.

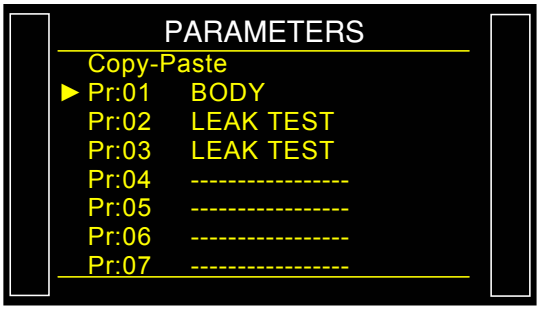
When the entire name is entered, press OK until the last character, the cursor slide to the left hand.



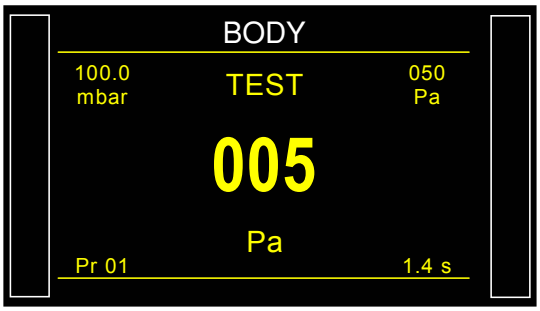
Once the name enterred, press one time ↓ to make appears the "↵" character, then press OK to back the cursor on the left hand side.



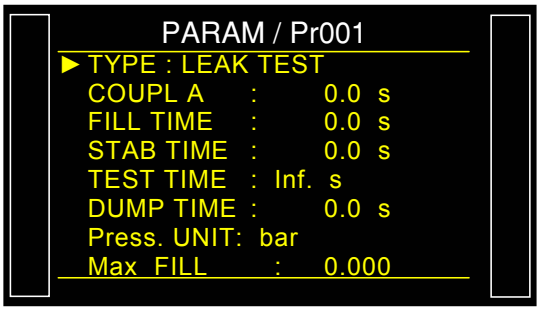
Back to the parameters menu, the program name appears.



During the test cycle the name is displayed (on top of the screen).

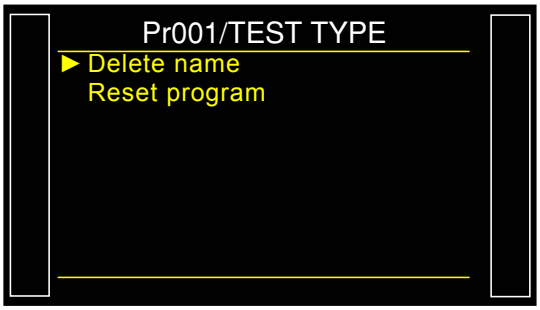


To delete the name, enter the program parameters menu, select "**TYPE**", then validate with OK.



The name and program deletion menu is displayed.

***Note**: if the program is deleted, the program name is deleted too.*



PROGRAM SEQUENCING FUNCTION

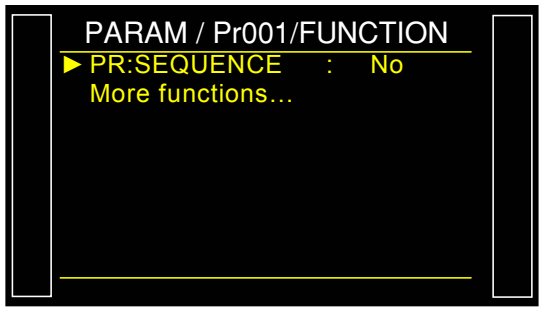
This function enables several tests to be carried out by the instrument one after the other. The instrument offers 8 program sequencing criteria.

The sequencing order can be edited; the choice of the following program is defined in the parameters. By default the programs are sequenced according to their original number P+1.

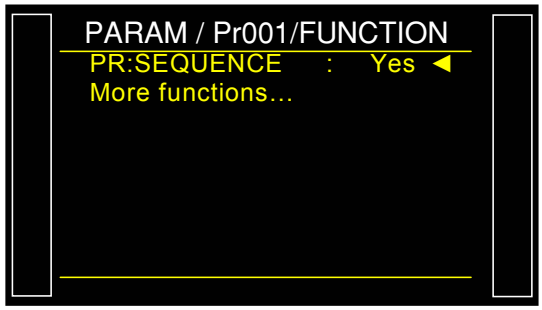
1. PROCEDURE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key. The Program sequence menu is displayed.

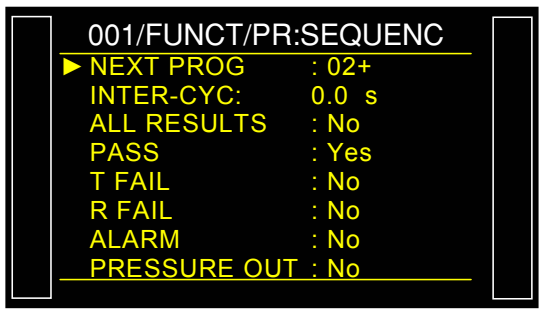


Associated parameters to be set:

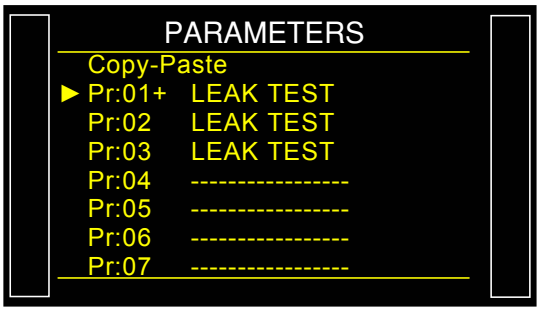
- **NEXT PROGRAM**: next program to be chained.
- **INTER-CYCLE**: wait or coupling time between the two cycles.

Chaining conditions:

- **ALL RESULTS**: always chains to the next program.
- **PASS**: chains on a good part.
- **TEST FAIL**: chain on a bad test part.
- **REFERENCE FAIL**: chain on a bad reference part.
- **ALARM**: chains if an alarm is triggered.
- **PRESSURE OUT OF LIMIT:** Chains if the pressure is out of the pressure limits. .
- **REWORKABLE**: chains if reworkable is valid.
- **CALIBRATION**: volume calibration check pass or fail.



When an active program is sequenced with another program, a "+" is displayed next to the program number.



UNITS FUNCTION

This function allows the operator to choose the pressure and leak measurement units.

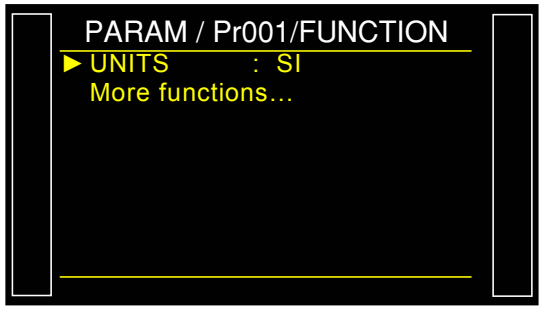
The different unit systems are: **SI** (International metric system, mm^3/s, cm^3/s, cm^3/min, cm^3/h, ml/s, ml/min and ml/h) **USA/SAE** (Anglo-Saxon unit system, $inch^3/s$, $inch^3/min$, $inch^3/h$, ft^3/s, ft^3/min and ft3/h) and **CUSTOM** measurement units.

If a custom measurement unit is used, it is possible to name it. This name will appear instead of the unit.

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

By using the arrows, select the units system.

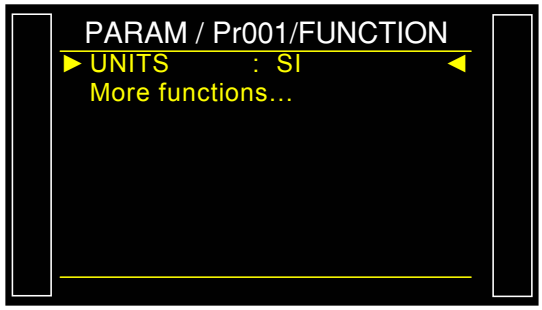


SI:

SI Units System (Metric International System, mm^3/s, cm^3/s, cm^3/min, cm^3/h, ml/s, ml/min and ml/h).

Select the leak unit.

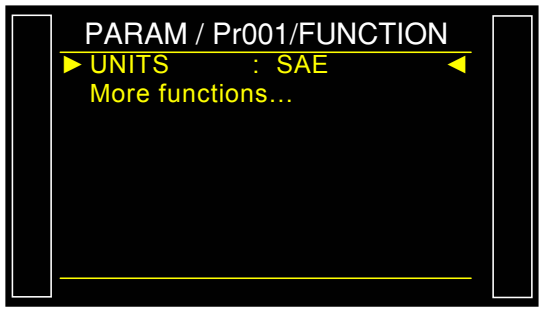
Then validate by pressing OK .



SAE:

SAE Units System (Anglo-Saxons Units, $inch^3/s$, $inch^3/min$, $inch^3/h$, ft^3/s, ft^3/min and ft^3/h).

Then validate by pressing OK .

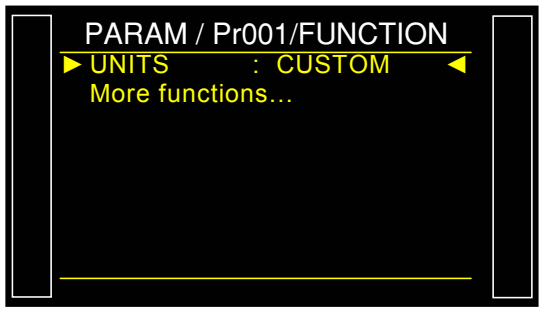


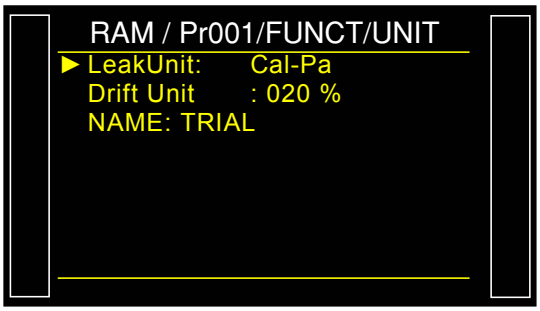
CUSTOM:

CUSTOM personalized measurement units.

The **CUSTOM** unit option allows calibrating the device using a master leak. A learning special cycle is necessary for this operation (see the special cycle's sheet). The activation of this unit gives access to another special cycle for checking.

Then validate by pressing OK .





Select **Cal-Pa** or **Cal-Pa/s**.

"**Drift Unit**": tolerance limit for the calibration drift. Checked using the "**CAL Check**" special cycle. If this value is exceeded, an alarm is triggered (default value: 20%).

"**NAME**": Naming of the unit.

1. SPECIAL CYCLES

1.1. CUSTOM UNIT LEARNING

If the 4 units of flow are not appropriate for the application, it is possible to use a custom unit mode (manual). To do this, a learning cycle must be carried out so that a custom unit value will correspond to a pressure drop.

To access this special cycle, select the unit **Cal-Pa** or **Cal-Pa/s** as a FAIL unit when creating a program.

Then the special learning cycle must be carried out.

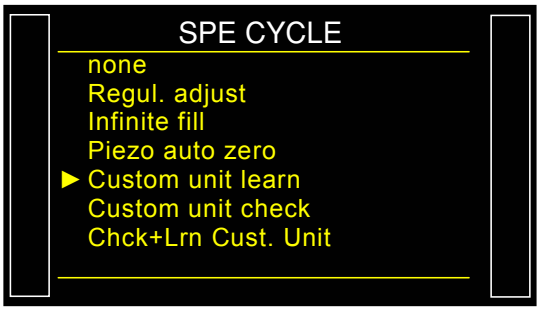
The first custom unit learning cycle must be carried out using the specials cycles menu so that a leak rate target which is different to zero can be entered.

On these outputs we have:

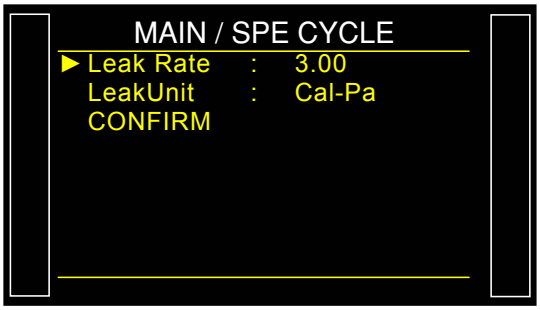
- "**Pass**" and "**end of cycle**" if the target is lower than or equal to the FAIL reject level,
- "**Fail**" and "**end of cycle**" if the target is greater than the test FAIL level.

From the main menu, enter the special cycle menu.

In the special cycle menu, select the "**Custom unit learn**" cycle.



Adjust the parameters, select "**CONFIRM**" and press OK.



The cycle screen is displayed confirming the special cycle selection. Press the "**START CYCLE**" key.

At the end of the special cycle, the result must be pass (**OK**).

1.2. CUSTOM UNIT CHECK

This special cycle is used to verify calibration in custom unit mode (Please refer to the explanation in the previous paragraph for more information). The Custom "**unit check**" cycle measures whether the calibration has drifted beyond the limits set as a percentage. If these have been exceeded, an alarm will be triggered and a "**custom unit learn**" cycle or an instrument check will be required.

If the opposite is the case the "**Pass**" and "**end of cycle**" or "**Fail**" and "**end of cycle**" Fail level.

The cycle screen is displayed confirming the special cycle selection. Press the "**START CYCLE**" key.

At the end of the special cycle, the result must be pass (**OK**).

1.3. CUSTOM UNIT CHECK + CUSTOM UNIT LEARN

This special cycle enables the checking of learning in the custom unit mode (Please refer to the previous paragraphs for more information). The checking cycle measures the drift in relation to the imposed percentage limits. If the limits are not exceeded, a Custom Unit learn cycle will be carried out automatically to refresh the value learnt.

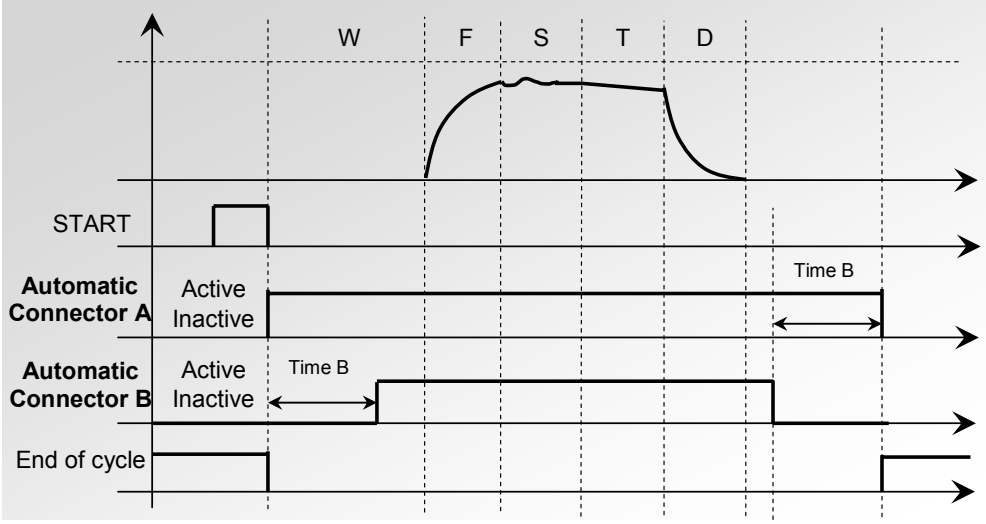
If the percentage limit is exceeded, the instrument will display a Custom Unit drift error.

The cycle screen is displayed confirming the special cycle selection. Press the "**START CYCLE**" key.

At the end of the special cycle, the result must be pass (**OK**).

AUTOMATIC CONNECTORS FUNCTION

The automatic connector is a pneumatic control enabling the pilot of an external logic (valve, pneumatic device…). This control is activated at the start of the cycle and is released at the end of the cycle.

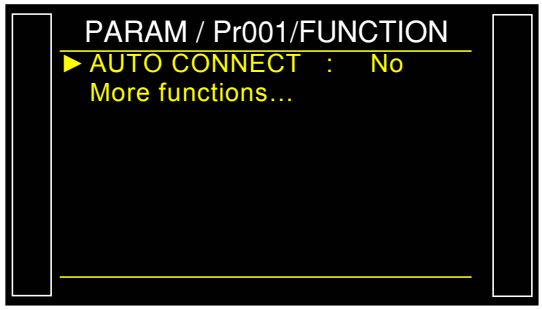


If several programs are sequenced, the automatic connectors are activated according to the times set as parameters in the first program and are deactivated according to the times set as parameters in the last program in the sequence.

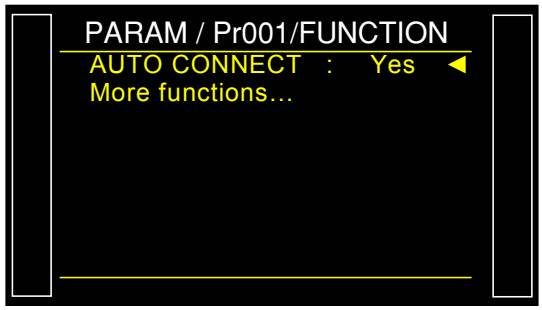
Once an automatic connector has been activated, it will remain active for all cycles between the first and last program in the sequence.

Activate the function or check if it checked.

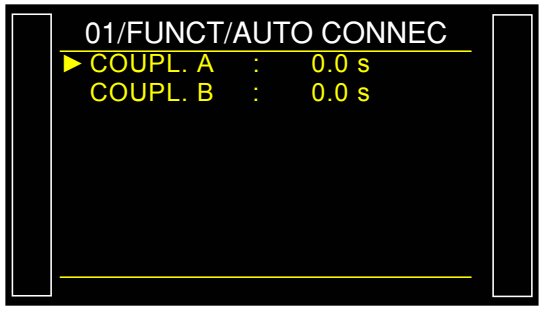
Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



Enter the values for the associated parameters: "**COUPLING A**" and "**COUPLING B**".



CALIBRATION CHECK FUNCTION

This function is used to verify that the test circuit is correct by measuring the effect of a known volume added to the test circuit. This pressure drop is compared with a reject level. By this it's possible to check the device calibration.

This auto-diagnostic check test can be carried out manually by the operator from the special cycle's menu, or automatically using programmable input of the I/O connector. The first operation must be carried out manually in order to set the volume parameter.

This cycle is only carried out if the test result is "**Pass**" and in this case you will see the messages **Pass** and **End of Cycle**. If the test result is "**Fail**", you will see the messages **Fail** and **End of Cycle**, and the auto-diagnostics cycle is not carried out. If the test on the part is "**Pass**" and the auto-diagnostics check is bad, you will see simultaneously the messages: **Pass**, **Alarm** and **End of Cycle** with the value of the pressure drop in Pa of the calibration by volume.

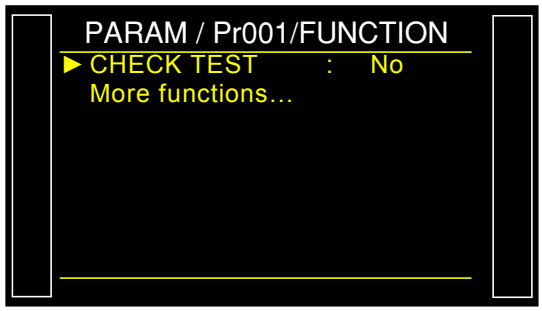
The auto-diagnostics check parameters include:

- ✓ the **last measurement** value (can't be modified),
- ✓ the **maximum value** of the auto-diagnostics, (value of the expected pressure drop when volume is increased),
- ✓ the value of the accepted **drift** as a percentage, higher or lower in relation to the pressure drop.
- ✓ the auto-diagnostics **check time** must also be set so as to obtain repeatable values. The default setting for this time is zero and the parameter must be determined according to the volumes used.

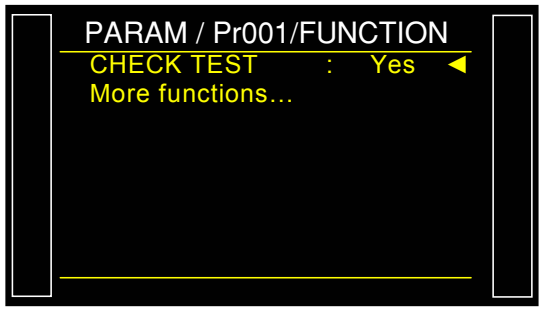
1. PROCEDURE

Activate the function or check if it checked.

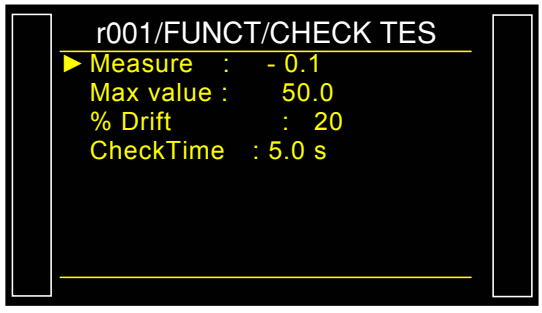
Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



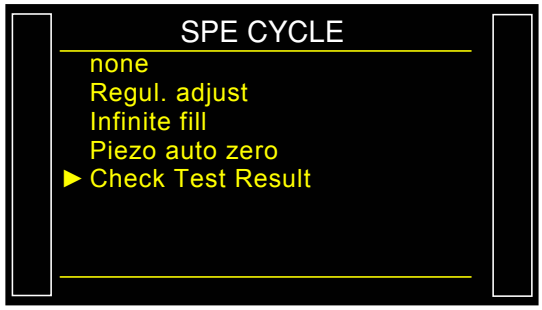
Enter the parameters values.



2. SPECIAL CYCLE

From the main menu, enter the special cycle menu.

In the special cycle menu, select "**Check Test Result**".

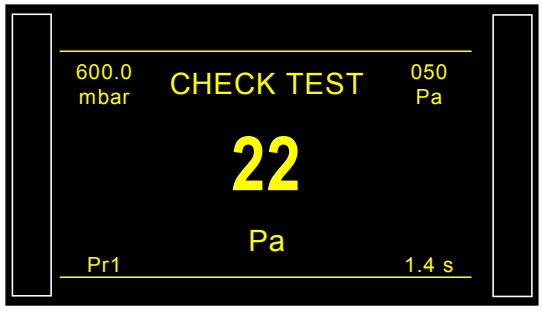


***Remind**: it's important to have a pass part plugged.*

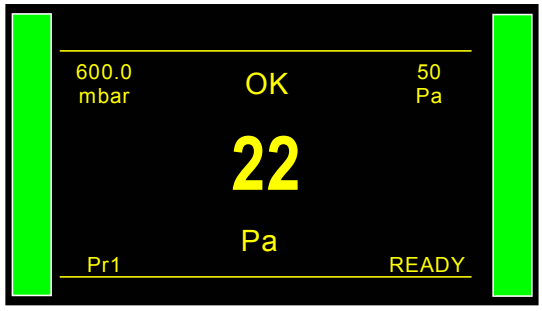
The cycle screen is displayed confirming the special cycle selection. Press the "**START CYCLE**" key.

The learning special cycle carry out the following steps:

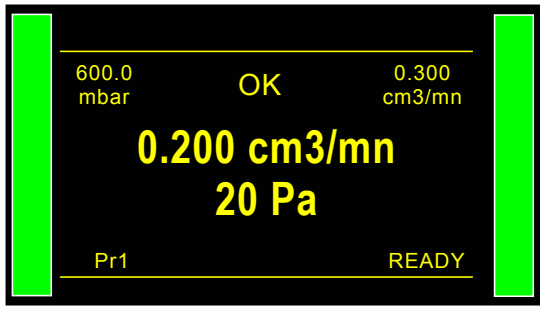
FILL / STABILIZATION / TEST et **CHECK TEST**



At the end of the special cycle, the result must be pass (**OK**).

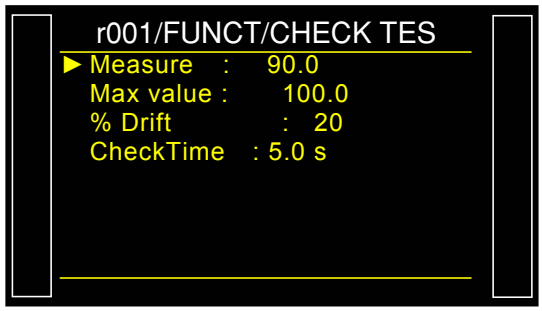


Example with flow unit and Pascal display.

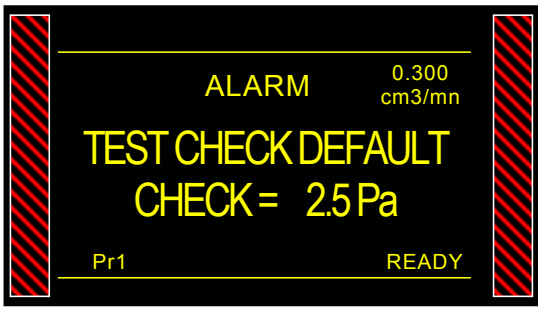


It's possible to check the recorded parameters by the special cycle by pressing the

.key just after the special cycle end.



In case of wrong calibration, an alarm is triggered.



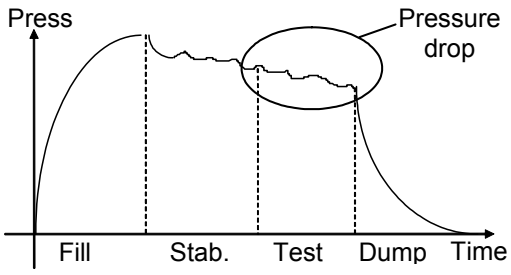
ATR 0 - 1 - 2 - 3 FUNCTIONS

1. PRINCIPLE

Problem:

Is the pressure drop occurring during the test time due to a leak or a transient effect?

The test environment is not always ideal for the measurement of pressure drops. There are several momentary events (ex: temperature or volume variations...) that can influence the measurement. They are called transient effects.



To avoid any interference, it is possible to increase the stabilization time to obtain the ideal measurement conditions during the test phase. However, increasing the stabilization time for each test may not be acceptable for optimal production speed.

Operational principle:

The principle consists of measuring the pressure variations caused by transient phenomena through the use of a learning cycle and then removing these variations from the final test result for a part.

Three ATR (**A**ttenuated **T**ransient **R**eduction) functions are available: ATR0, ATR1, ATR2 and ATR3. ATR1 and ATR2 are different because of their learning cycles.

1.1. ATR0

The initial value of the transient is known. Parameters must be set manually.

The ATR may only be used on parts that have identical behaviors during the test, in other words, parts that have an identical transient.

Associated parameters to be set are:

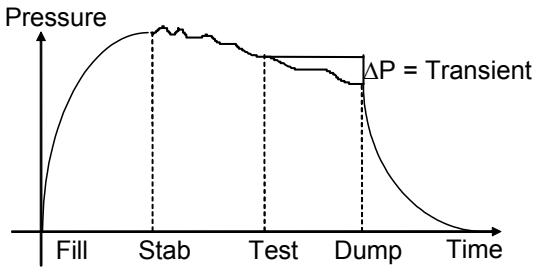
- **Start** (Initial value of the transient),
- **Transient** (actual, non modifiable value of the transient),
- **Percentage drift** (Percent of the reject level, the measurements used for transcient calculation are less than this value).
- **Drift** (Drift tolerance on acquisition of the transient, as a % of the Reject level).

The "**start**" value is saved and subtracted from the final result of the tests.

1.2. ATR1

The value of the transient is unknown. A special learning cycle must be carried out.

The learning cycle for this function must be carried out on a known good part.



The instrument performs a normal test cycle and considers that the pressure variation measured at the end of the cycle is the transient. This value is saved and subtracted from the final result of subsequent tests. Its value is recalculated at each measurement cycle.

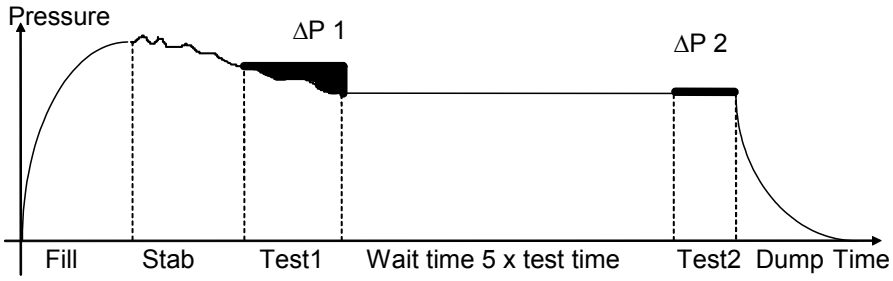
Reasoning: the part is a good part therefore the pressure drop measured is the transient.

Associated parameters to be set:

- **Start** (Initial value of the transient),
- **Transient** (actual, non modifiable value of the transient),
- **Percentage drift** (Percent of the reject level, the measurements used for transcient calculation are less than this value).
- **Drift** (Drift tolerance on acquisition of the transient, as a % of the Reject level).

1.3. ATR 2

The value of the transient is not known but the possible leak of the part is taken into account when the transient value is computed during the special cycle.



At the end of test time 1, the ATEQ saves the pressure variation ΔP1, function of the transient and the leak if there is one.

$$\Delta P1 = Leak + Transient$$

Following the waiting time (equivalent to 5 times the normal test time), we consider that the transient phenomena has disappeared. During the second test time, the ATEQ instrument measures a second pressure drop ΔP2 which corresponds to the leak.

$$\Delta P2 = Leak$$

By taking these two pressure variations, we can calculate the transient.

$$\Delta P1 - \Delta P2 = (Leak + Transient) - Leak = Transient$$

It is this transient which will be subtracted from the leak measurement of the following cycles.

Through the use of the ATR, the **ATEQ** instrument is able to differentiate a Pass part from a Fail part without being influenced by the transient effects whilst keeping a short stabilization time.

Associated parameters to be set:

- **Start** (Initial value of the transient),
- **Transient** (actual and non modifiable value of the transient),
- **Percentage drift** (Drift tolerance on acquisition of the transient, as a % of the reject level).

When a parameter is modified but no learning cycle has started, an **ATR** error occurs. The **Alarm** and **End of Cycle** outputs are activated.

A learning cycle may be carried out when the measured value is greater than the reject level. After the learning cycle, the **Pass** and **End of Cycle** outputs are activated.

1.4. ATR3

This is the same as the ATR2. The difference is, if the measurement result is negative, then the **measurement absolute value** is displayed.

Associated parameters to be set:

- **Start** (Initial value of the transient),
- **Transient** (actual, non modifiable value of the transient),
- **Percentage drift** (Percent of the reject level, the measurements used for transcient calculation are less than this value).
- **Drift** (Drift tolerance on acquisition of the transient, as a % of the Reject level).

1.5. TRANSIENT DRIFT

Due to the evolution of the test conditions (temperature variations...), the value of the transient can vary through time. It is therefore necessary to track its evolution.

To avoid having to carry out learning cycles too often, the **ATEQ** instrument saves the last ten values of parts considered as very good (result close to 0) and recalculates the transient using the average value.

Parts are considered as very good when their leak rate is lower than the “percentage drift” value of the reject level. This value can be modified between 0 % and 100 %.

$$\text{Transient} = \frac{\sum \text{of the value of the last 10 very good parts}}{10}$$

The transient attenuation (ATR) can only be used on parts that behave in a very similar way during the test, in other words, parts that have similar transients.

When the batch of parts changes or when the production is stopped for a certain time, it is necessary to carry out a new learning cycle, as the transient will change.

The **ATR** error appears if the difference between the transient and the initial (start) value is greater than the reject level.

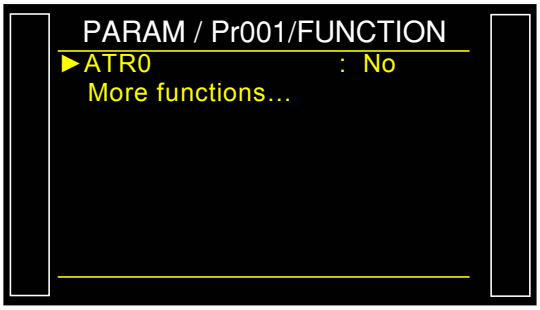
The transient can evolve one way or the other; therefore it is preferable to have identical Test and Reference reject levels.

2. PROCEDURE

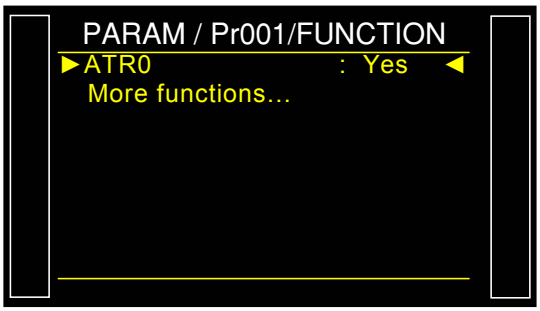
Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

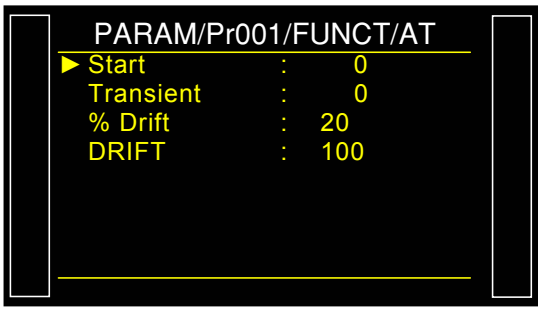
***Note**: Selecting an ATR function cancels the others, only one ATR function by program.*



By using the arrows, select "**Yes**" and validate with the OK key.



The parameters are displayed, enter the values.

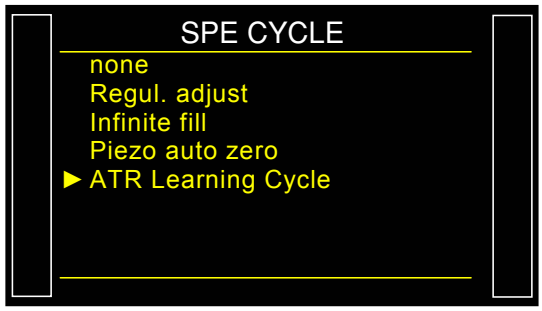


3. SPECIAL CYCLE

Example with **ATR1** (the other processes are the same for **ATR2** and **ATR3**.

From the main menu, enter the special cycle menu.

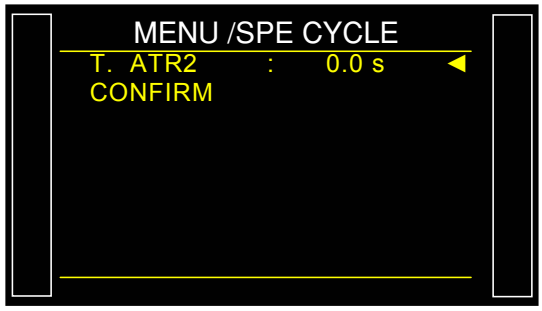
In the special cycle menu, select "**ATR Learning Cycle**".



For some **ATR**, others parameters are to be informed.

Adjust the value, the go in front of "**CONFIRM**"

and press OK.

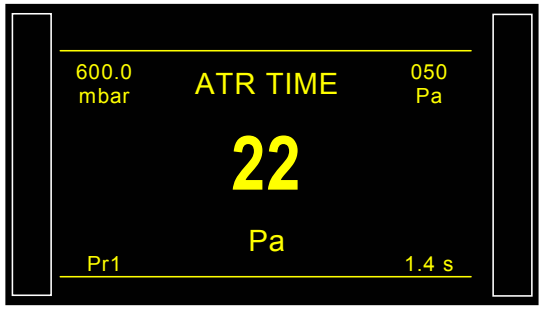


***Remind**: it's important to have a pass part plugged.*

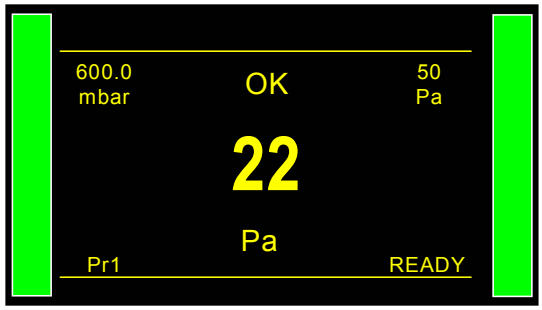
The cycle screen is displayed confirming the special cycle selection. Press the "**START CYCLE**" key.

The learning special cycle carry out the following steps:

FILL / STABILIZATION / TEST et **CHECK TEST**

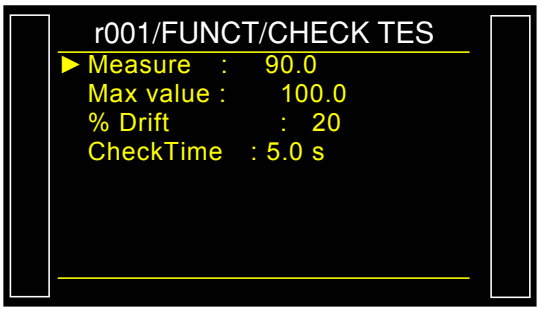


At the end of the special cycle, the result must be pass (**OK**).

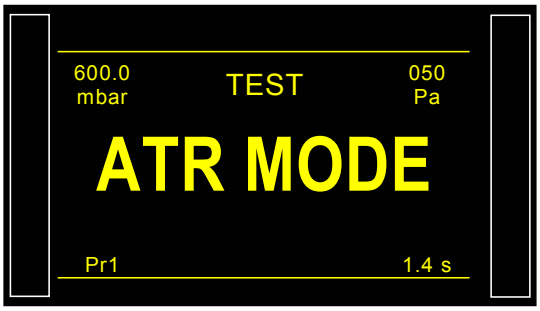


It's possible to check the recorded parameters by the special cycle by pressing the OK key just after the special cycle end.

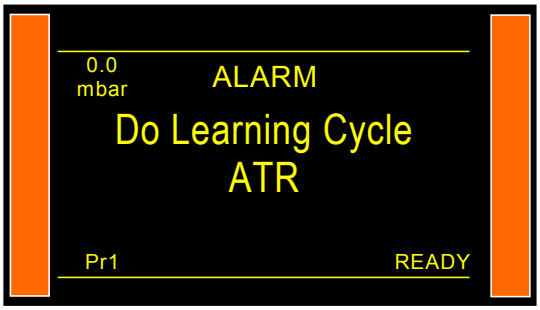
***Note**: it's possible to modify these parameters.*



At each test time the device displays the "**ATR MODE**" message to inform the **ATR** computing of the device.



If theATR special cycle is not carried out before, the alarm message "**Do Learning Cycle ATR**" is triggered.



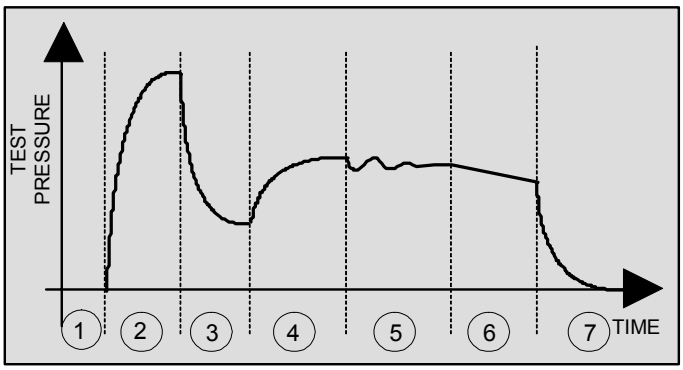
PRE-FILL AND FILL TYPES

1. PRE-FILL TYPE

The pre-fill function is used in three fields of application:

- large volume part test: to fill the part faster in order to reduce the cycle time (without pre-fill time),
- test on parts requiring an initial stretch so that they remain volumetrically stable for the duration of the test,
- part proof tests, where the pre-fill pressure exerts an elevated pressure on the test part to ensure the part will continue to operate successfully at its working pressure.

Insertion of the pre-fill and pre-dump times in the measurement cycle.



1) Coupling time,
2) Pre-fill,
3) Pre-dump,
4) Fill,
5) Stabilization,
6) Test,
7) Dump.

This function brings up the display of the words **"Regulator Adjust"** under "**Spe. Cycle**" so that the new pressure can be set.

<u>There are several types of pre-fill available:</u>

1.1. STANDARD (BY DEFAULT)

Associated parameters to be set:

- **Max Pre-FILL** (maximum pre-fill pressure limit),
- **C. P-FILL** (pre-fill pressure instruction).
- **Pre-FILL** (pre-fill time),
- **Pre-DUMP** (pre-dump time).

1.2. INSTRUCTION

When the pressure reaches the instruction the device runs the following step else it still filling until the end of the pre-fill time.

Associated parameters to set:

- **Set Pre-Fill** (instruction/target value),
- **Pre-FILL** (pre-fill time),
- **Pre-DUMP** (pre-dump time).

1.3. BALLISTIC

This fill mode enables fluctuation in the air pressure (filling parts with a high level of deformation) and in particular allows the **Max Pre-Fill** limit to be exceeded without the cycle stopping and an error message being displayed.

Associated parameters to be set:

- **Set PreFILL** (Pre fill pressure instruction).
- **Pre-FILL** (pre-fill time),
- **Pre-DUMP** (pre-dump time).

1.4. FILL RAMP (ELECTRONIC REGULATOR ONLY)

This fill mode applies only to electronic regulators and will allow the part to be slowly filled to the Pre-Fill pressure in a linear manner over the duration of the fill time.

- **Max PreFILL.** (maximum pre-fill pressure limit),,
- **Set PreFILL** (Pre fill pressure instruction).
- **PRE-FILL.** (pre-fill time),
- **PRE-DUMP** (pre-dump time).

1.5. PRE-FILL REGULATOR

This function applies when two regulators are installed in the instrument allowing the choice of which regulator is to be used for pre-fill (1 or 2).

2. FILL TYPE

This function provides a choice of these possible types of fill.

2.1. STANDARD (BY DEFAULT)

The default setting - during Fill time, the Fill valve opens allowing the regulator to supply air to the part at the regulator's set pressure.

Associated parameters to be set: **Set FILL** (fill pressure instruction).

2.2. INSTRUCTION (SET)

This mode allows a Mechanical regulator to fill the part to a value less than the regulator's set pressure. When the pressure sensor in the instrument reads the **Set Fill** value, the Fill-Valve is closed and the test sequence continues.

Associated parameters to set: **Set Fill** (instruction/target value),

2.3. BALLISTIC

This fill mode enables fluctuation in the air pressure (filling parts with a high level of deformation) and in particular allows the maximum fill limit to be exceeded without the cycle stopping and an error message being displayed. However, once the test sequence enters the stabilization phase, the test pressure must be within the limits defined by **Max Fill** and **Min Fill**.

Associated parameters to set: **Set Fill** (instruction/target value),

2.4. RAMP (ELECTRONIC REGULATOR ONLY)

The device carries on a linear fill.

FILL ADJUST

2.5. FILL ADJUST

This function appears only with a device with an electronic regulator built in.

In case of part hard to fill, this function allows automatically correct instruction to reach precisely the programmed pressure target.

Associated parameters to set:

- **Set FILL** (fill pressure instruction).
- **TIME ADJ** (extra time for correction).

3. FILL REGULATOR

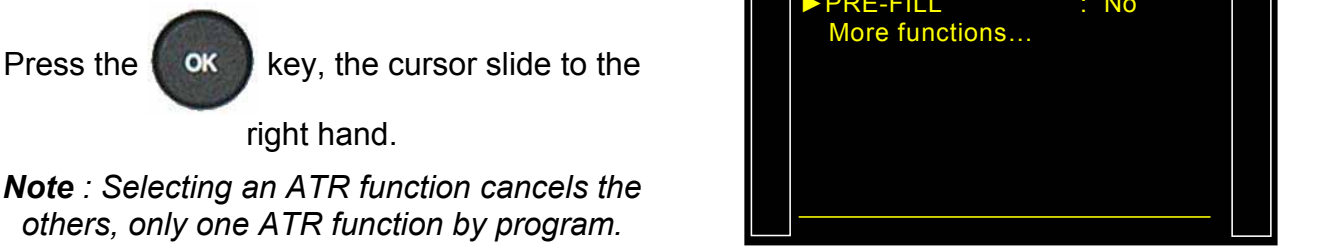
This function provides a choice of which of two regulators to use for the fill (1 or 2).

4. PROCEDURE

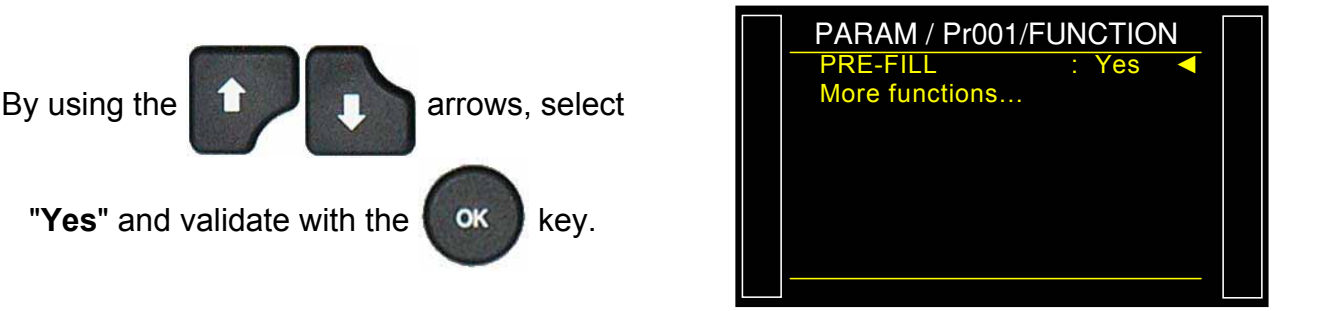
Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

***Note** : Selecting an ATR function cancels the others, only one ATR function by program.*

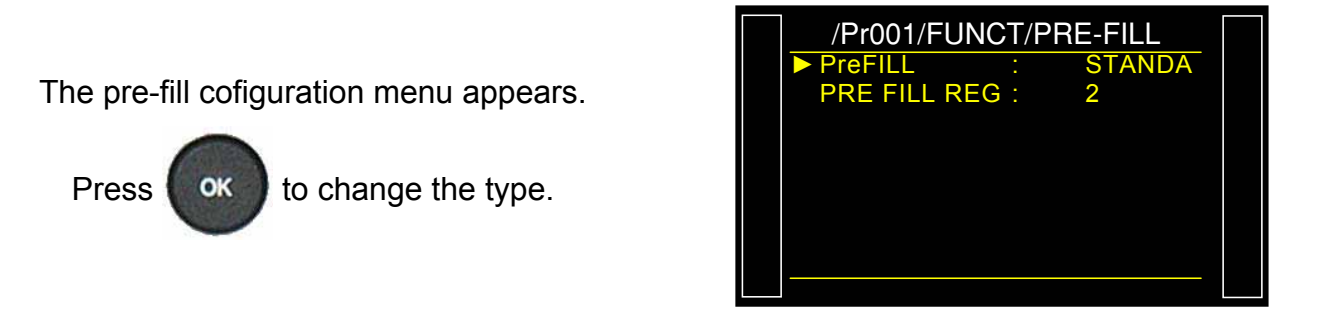


By using the arrows, select "**Yes**" and validate with the OK key.

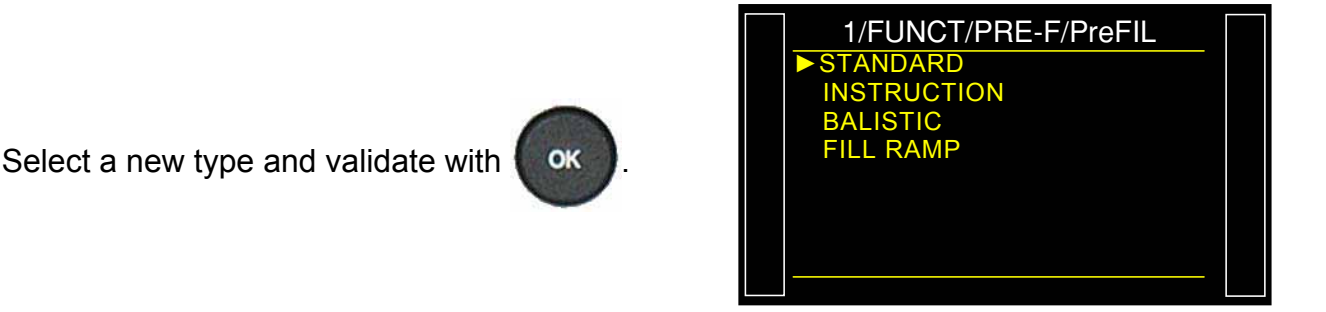


The pre-fill cofiguration menu appears.

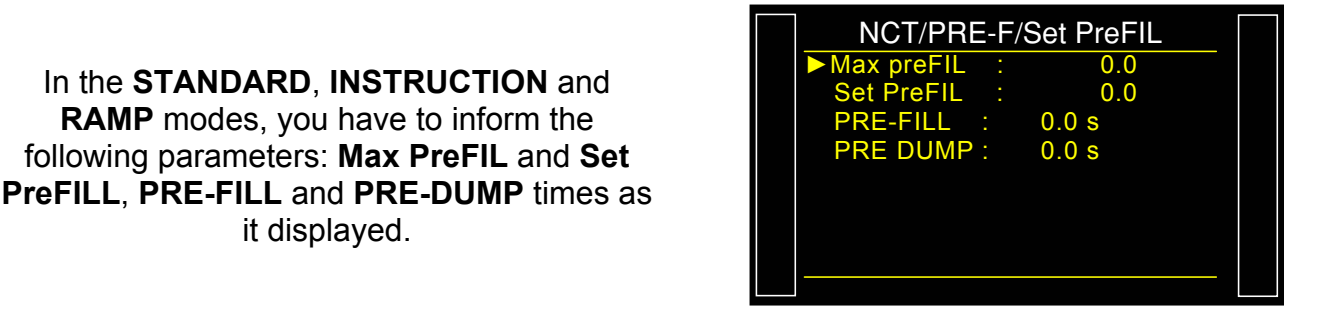
Press OK to change the type.



Select a new type and validate with OK.



In the **STANDARD**, **INSTRUCTION** and **RAMP** modes, you have to inform the following parameters: **Max PreFIL** and **Set PreFILL**, **PRE-FILL** and **PRE-DUMP** times as it displayed.



Use the same process for the fill mode.

VALVES CODES / AUXILIAIRY OUTPUTS

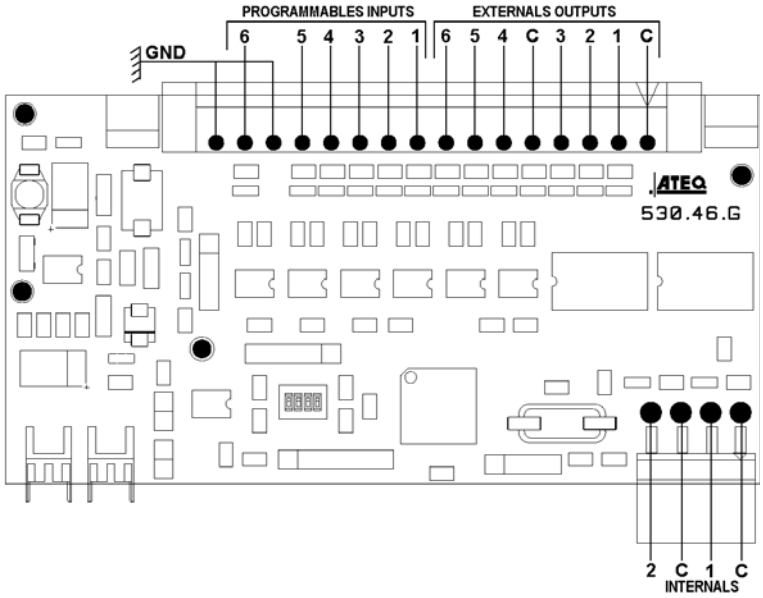
1. OPTIONAL VALVE CODE BOARD

The instrument has eight programmable electrical outputs (24V DC/100 mA maximum) on the (optional) valve code board.

The "**Valve code**" outputs dedicated to predefined pneumatic functions are identified by the associated function's name: Stamping, automatic connector, etc… If they are not associated to a function but are available to the operator.

They are labeled: **Ext N** or **Int N** (N = position number).

A free used output is activated during the cycle, in continue or during a programmed time..

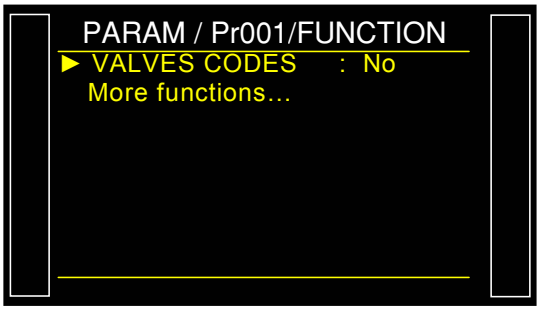


The options for its activation are available in the **CONFIGURATION / AUTOMATISM / OUTPUT CONFIG / VALVE C.** menu (this menu appears only if the "**Valves Codes**" function is activated in one test program).

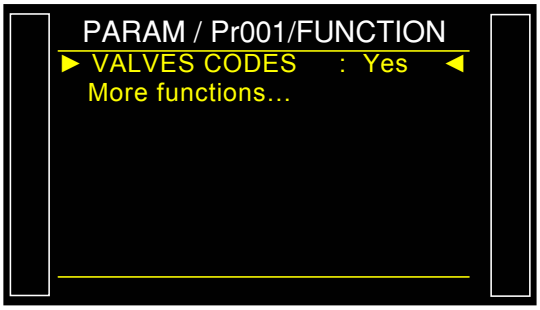
1.1. PROCEDURE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

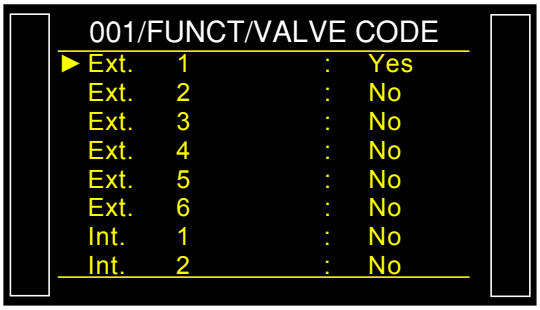


By using the arrows, select "**Yes**" and validate with the OK key.



The validation menu of each output, external and internal is displayed.

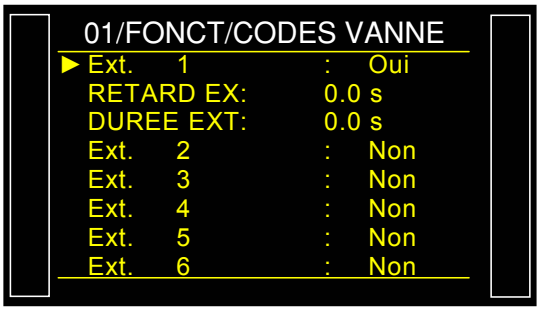
Activate one or both output codes by validate with "**Yes**".



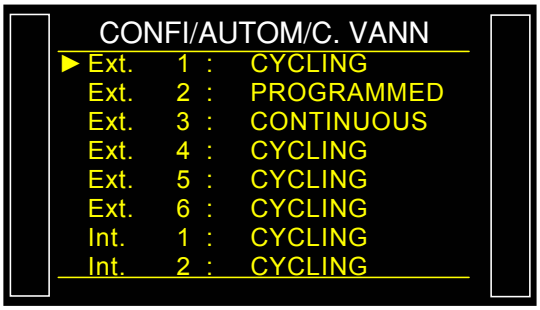
If the output is configured on "**PROGRAMMED**" the activation times have to be informed.

DELAY EXT : delay for the output activation after start test cycle.

TIME EXT : activation time of the output.



To configure "**Valve Code**" output mode go in the "**CONFIGURATION/AUTOMATISM/ OUTPUTS CONFIG./ VALVE C.**



- **CYCLING**: the output is activated during the test cycle.
- **CONTINUOUS**: the output is continuously activated.
- **PROGRAMMED**: the output is activated during a programmed time.

2. 24V AUXILIARY OUTPUTS

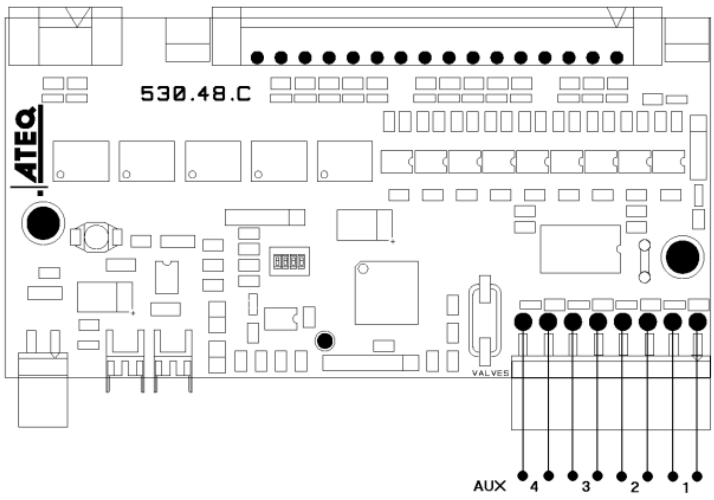
On the instrument main board there are four programmable electrical outputs (24V DC / 100 mA maximum / output).

Unlike the **valve code** outputs, the **auxiliary outputs** reserved for a pneumatic function are identified by the name of the function: stamping, automatic connector, etc.

They are not associated to a function but are available to the operator.

They are labeled **Aux N** (N = position number).

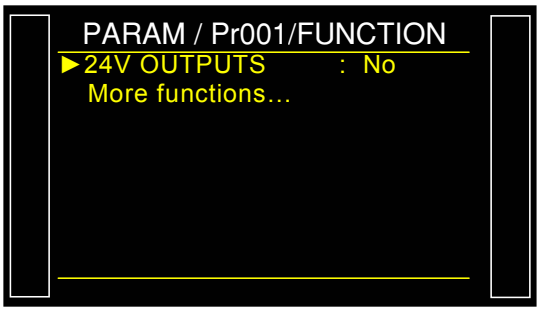
Associated parameters to be adjusted: Auxiliary 1, Auxiliary 2, Auxiliary 3, Auxiliary 4.



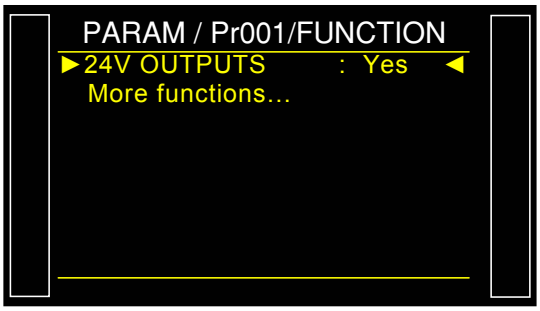
2.1. PROCEDURE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

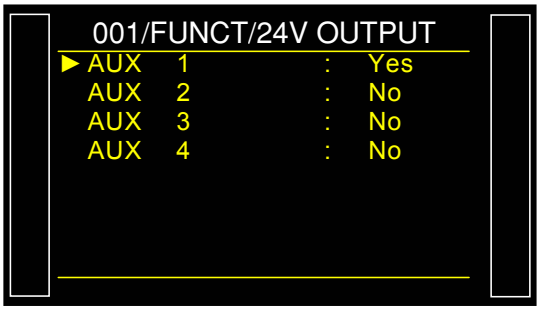


By using the arrows, select "**Yes**" and validate with the OK key.

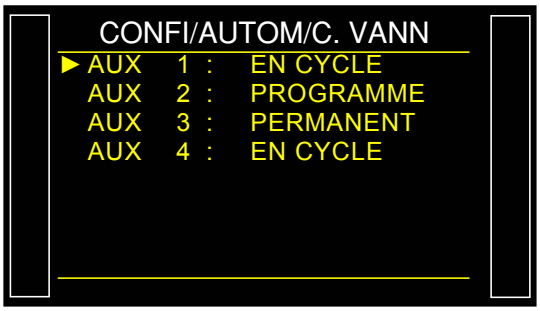


The validation menu of each output, external and internal is displayed.

Activate one or both auxiliary output by validate with "**Yes**".



To configure "**Auxiliary**" output mode go in the "**CONFIGURATION/AUTOMATISM/ OUTPUTS CONFIG./ I/O.**



- **CYCLING**: the output is activated during the test cycle.
- **CONTINUOUS**: the output is continuously activated.
- **PROGRAMMED**: the output is activated during a programmed time.

***Note**: some auxiliaries outputs can not be available and are attributed for others functions, example: automatic connector, stamping etc.*

END OF CYCLE

This function enables the choosing of one of the different end of cycle depending on the configuration of the instrument (connection to a PLC…).

1. RELAY SEQUENCING RELATED TO DIFFERENT END OF CYCLE

In order to interface the **ATEQ** with its environment (PLC, PC …), the following timing charts supply the details of the sequencing of the electrical outputs (relay board on the J3 connector) and pneumatic outputs (automatic connectors), depending on the commands entered on the front panel or through the J3 connector (START, RESET).

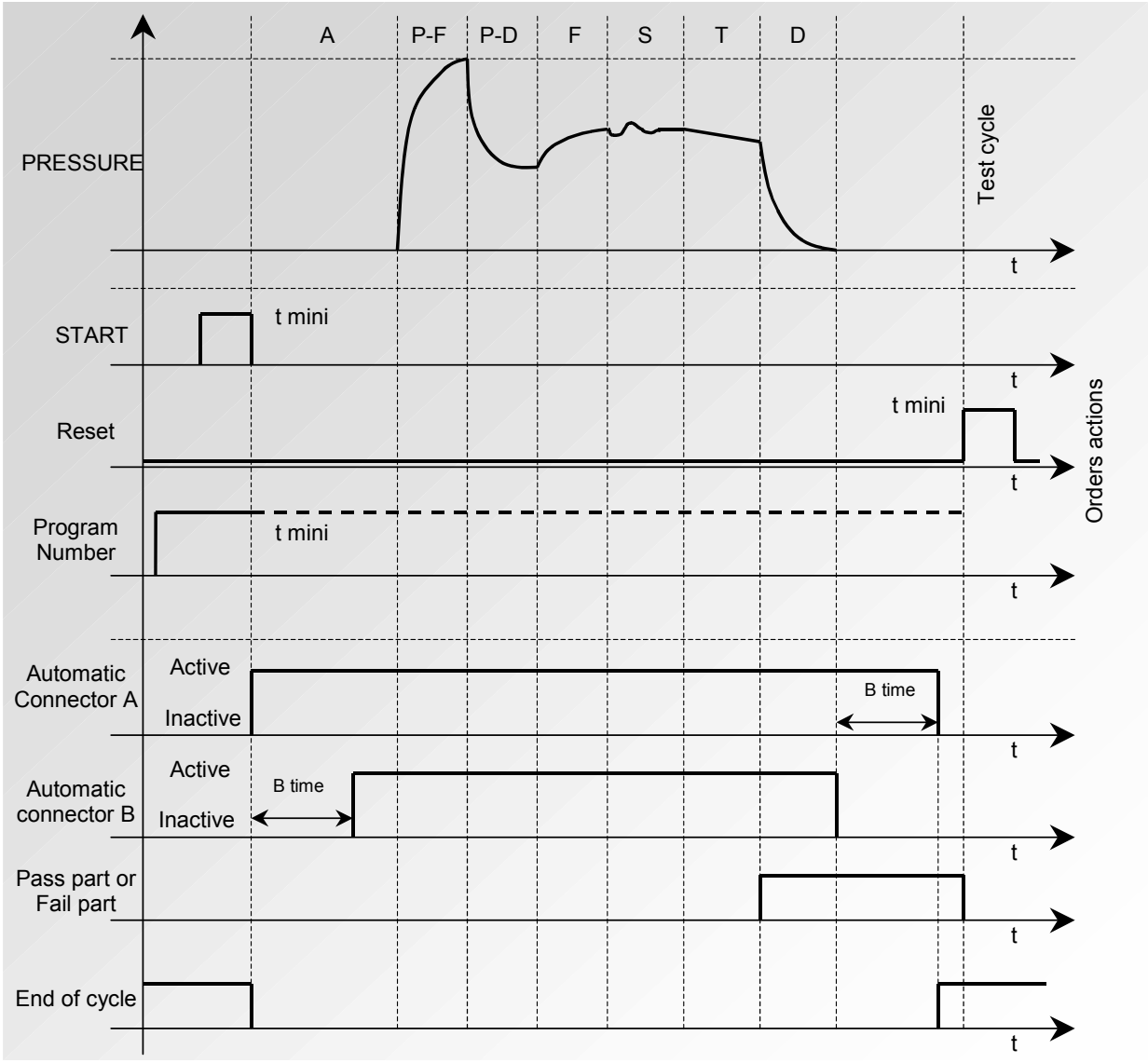
Legend	
A	Coupling time A
B	Coupling time B
P - F	Pre-fill time
P - D	Pre-dump time
F	Fill time
S	Stabilization time
#	Unspecified time occurring between the programmed test time and the pressing of the reset key.
T	Test time
D	Dump time
START	Press the key on the front panel or short pins 2-3 on the relay board connector.
RESET	Press the key on the front panel or short pins 1-2 on the on the relay board connector.
Automatic Connector	Active (high level): the pneumatic output is active (air output). Inactive (low level): the pneumatic output is inactive (no air output).
PASS or FAIL	Fail part or Pass part relay on the on the relay board connector
EoC	End of cycle relay on the relay board connector
t mini	Minimum time to accept an entry 50 ms on connector on the relay board.

Actual times are not those displayed but those on the print-out.

1.1. "AUTOMATIC RESET" CYCLE END

If the part is OK, the Pass part relay will be activated as soon as the test ends and remain so until the start of the following cycle. Following the dump time, the end of cycle relay is activated.

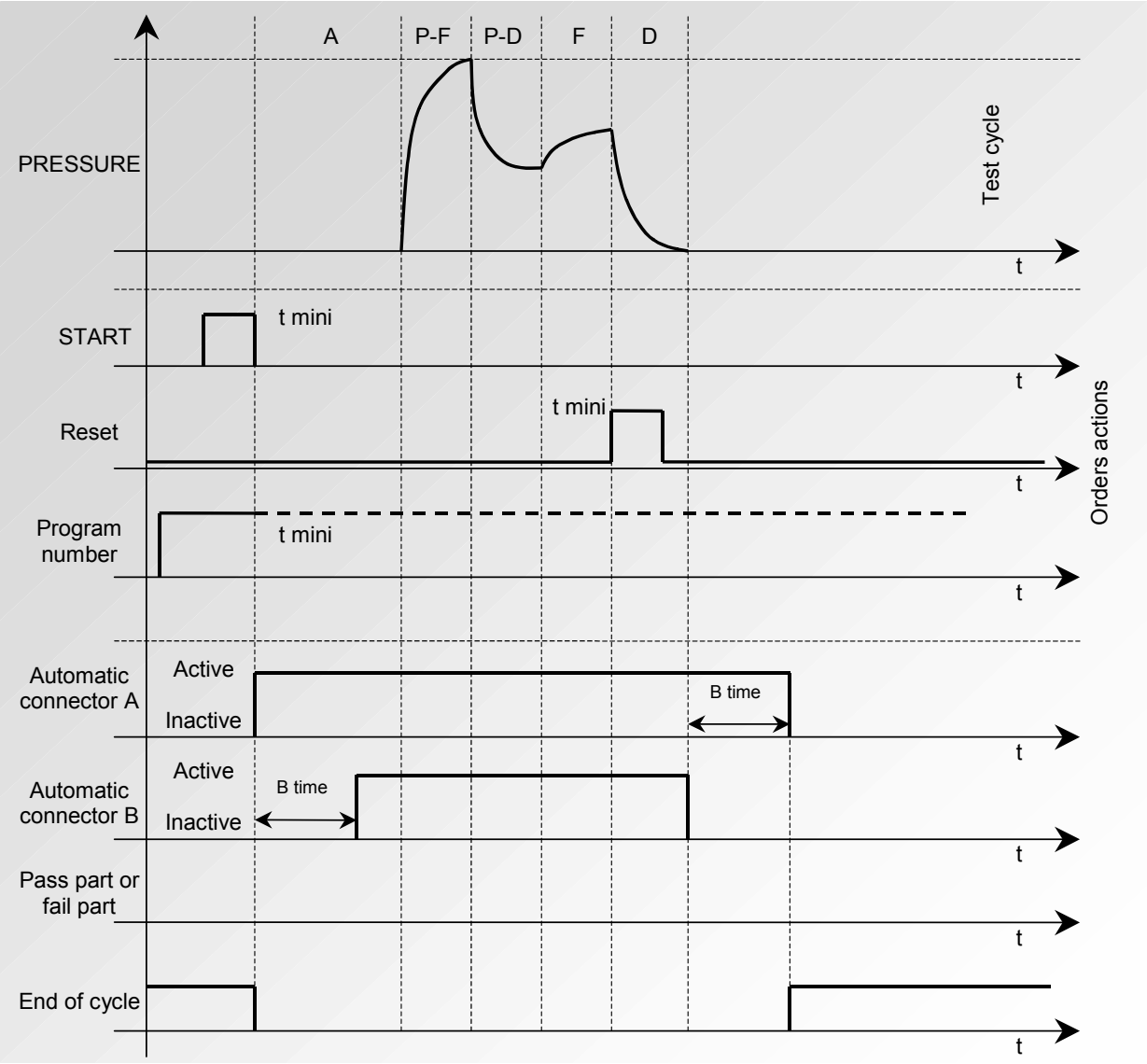
If the part is fail, the Fail part relay is activated as soon as the test is completed. The instrument automatically dumps and sends an end of cycle signal. A new cycle can then be started.



The active program is the one selected before starting up. It remains active even if the program inputs on the connector are no longer activated. This selection can only be modified during the inter cycle period.

To return to program 1, when a cycle is not in progress, press any program selection inputs.

1.2. ENDING A CYCLE WITH THE RESET KEY ("AUTOMATIC RESET" CYCLE END)



The active program is the one selected before starting up. It remains active even if the program inputs on the connector are no longer activated. This selection can only be modified during the inter cycle period.

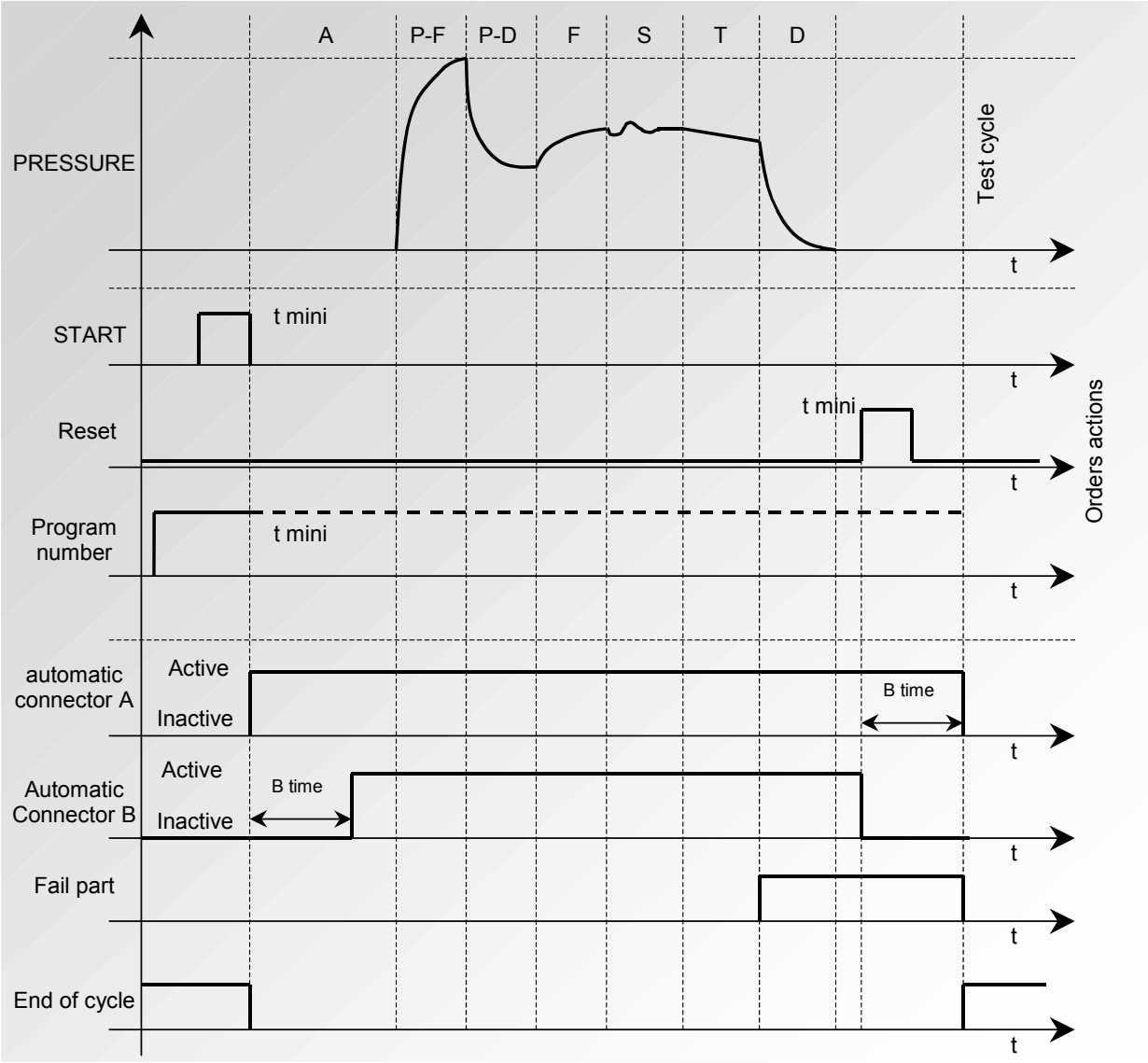
To return to program 1, when a cycle is not in progress, press any program selection inputs.

1.3. "RESET + DUMP" CYCLE END (AUTOMATIC DUMP)

If the part is OK, the Pass part relay is activated as soon as the test time is finished, and remains so (only in position 2) until the next cycle is started.

At the end of the dump time, the end of cycle relay is activated.

If the part is Fail, as soon as the test time is over, the Fail part relay is activated and remains so until the end of the cycle. The dump is then carried out. The cycle can be ended by pressing the **RESET** key.



The active program is the one selected before starting up. It remains active even if the program inputs on the connector are no longer activated. This selection can only be modified during the inter cycle period.

To return to program 1, when a cycle is not in progress, press any program selection inputs.

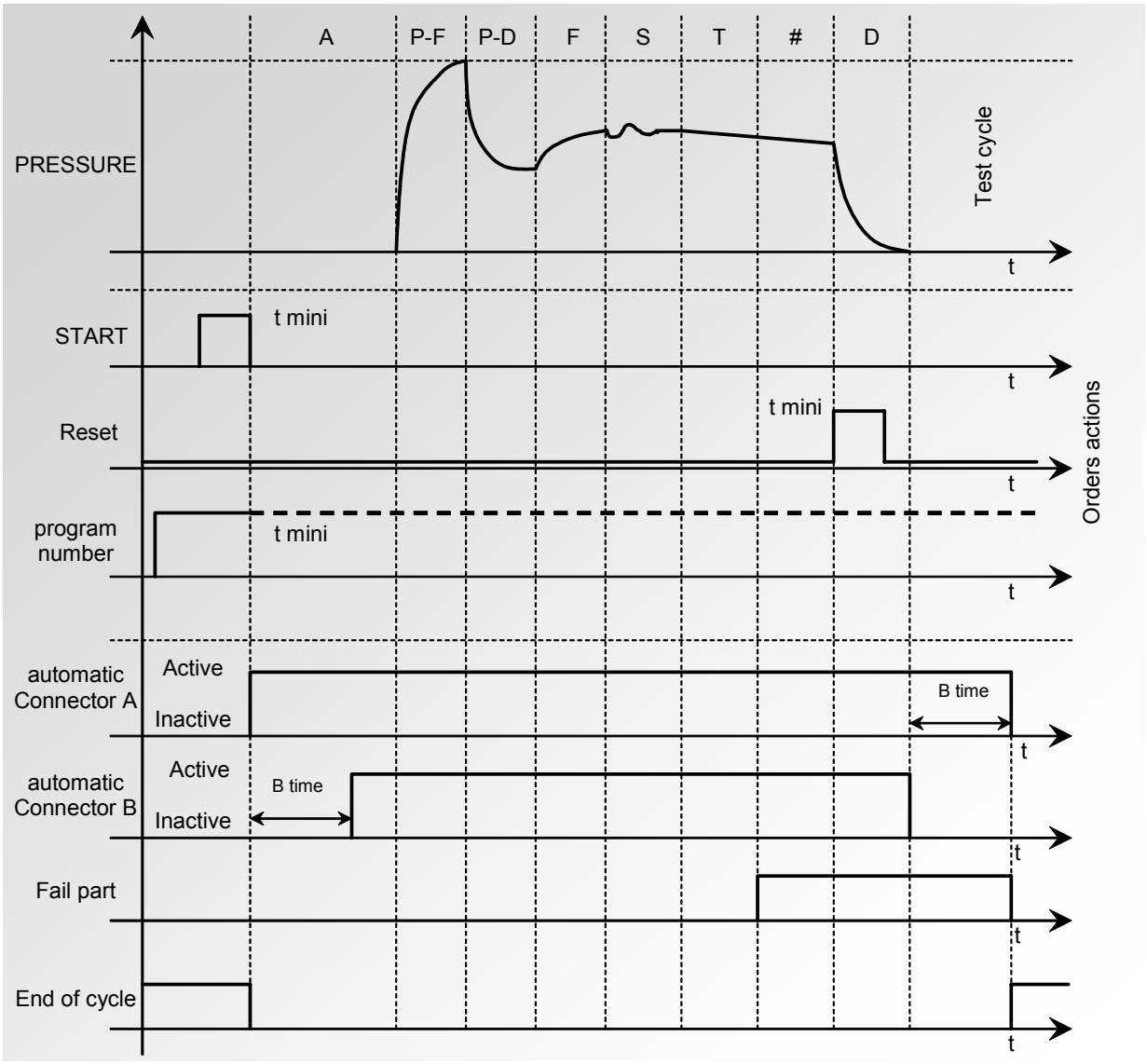
1.4. "FILL" CYCLE END

If the part is OK, the Pass part relay is activated at the end of the test time and remains so till the start of the next cycle.

At the end of the dump time, the end of cycle relay is activated (or at the end of coupling time B if a value has been set for it).

If the part is fail, as soon as the test time is finished the Fail part relay becomes and remains activated.

The instrument waits for a reset from the operator or the PLC to start the dump time and send the end of cycle signal.



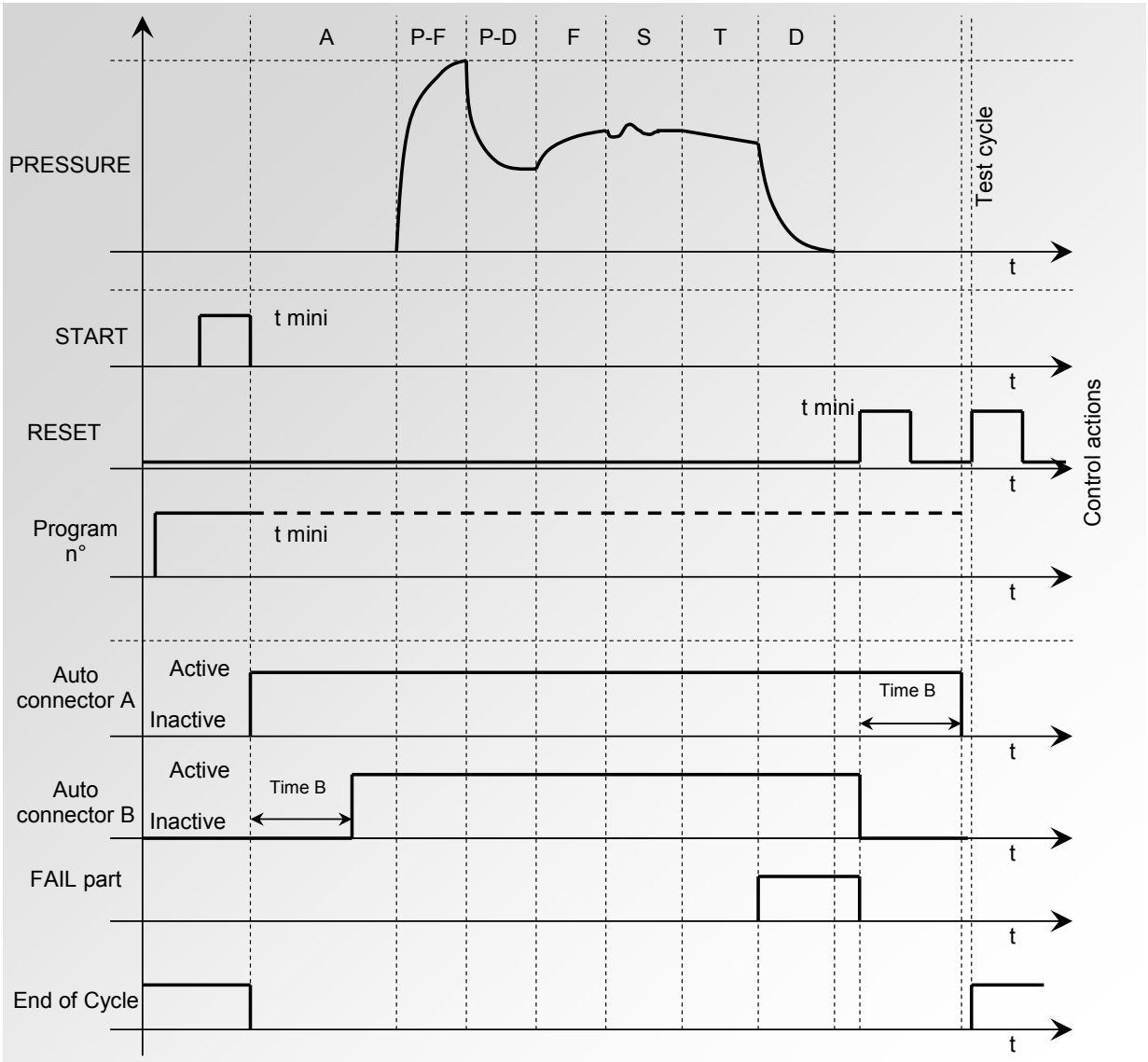
1.5. "DOUBLE RESET + DUMP" CYCLE END (AUTOMATIC DUMP)

If the part is OK, the Pass part relay is activated as soon as the test time is finished, and remains so until the next cycle is launched. At the end of the dump time, the end of cycle relay is activated (or after coupling time B if a value has been set for it).

If the part is Fail, as soon as the test time is over, the dump phase is carried out and the Fail part relay is activated

A first press on the **RESET** key or activation of the **RESET** input cancels the result relay.

The End of Cycle is obtained by pressing a second time on the **RESET** key or by activating the **RESET** input again.

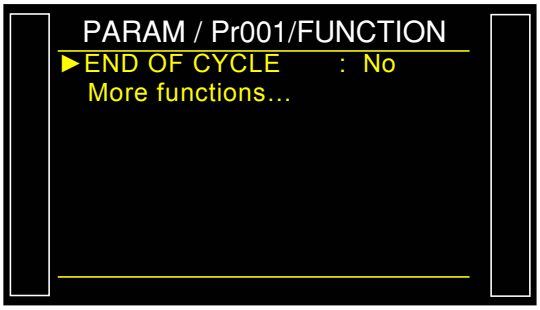


The active program is the one selected before starting up. It remains active even if the program inputs on the connector are no longer activated. This selection can only be modified during the inter cycle period.

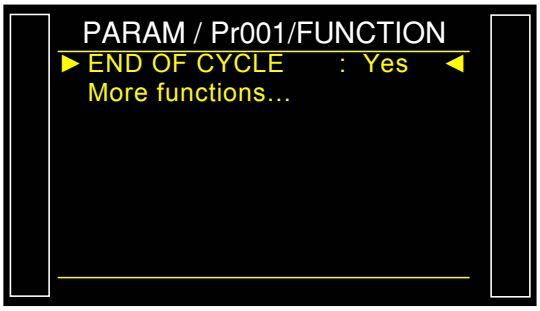
2. PROCEDURE

Activate the function or check if it checked.

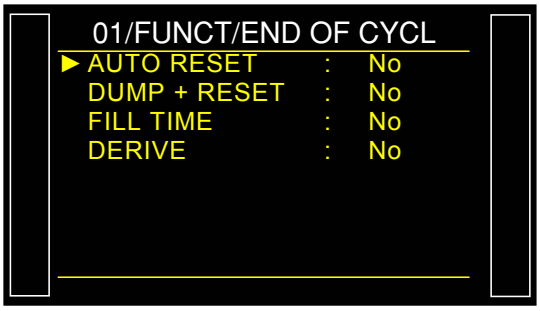
Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



Then select the end of cycle mode you want (validate with "**Yes**").



MINI VALVE

This function is dedicated to small part applications (volume below 10 cm^3) and has a base time of 0.01s instead of 0.1 s.

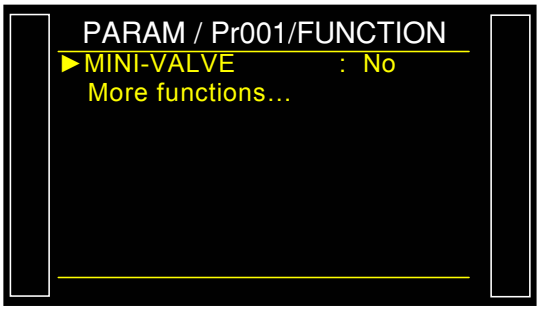
The programming of an **ATEQ** with a mini valve is identical to the programming of the standard **ATEQ**.

Parameter to be set is: **A-Z Diff** (differential Auto Zero). This time can be reduced as long as the obtained values are stable and repeatable.

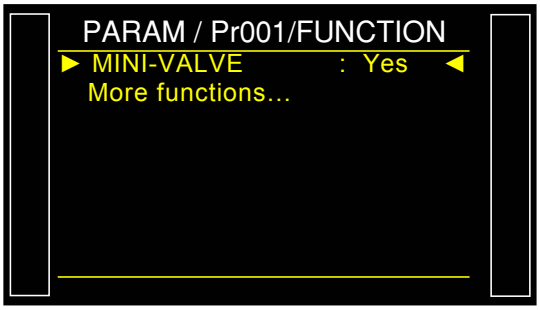
1. PROCEDURE

Activate the function or check if it checked.

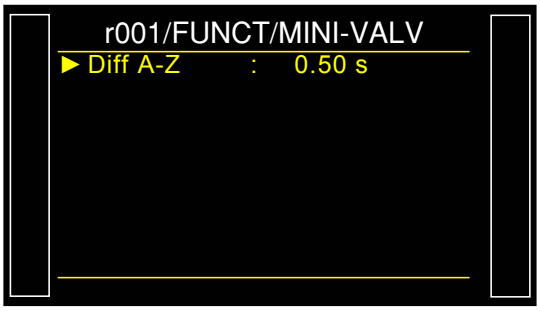
Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.

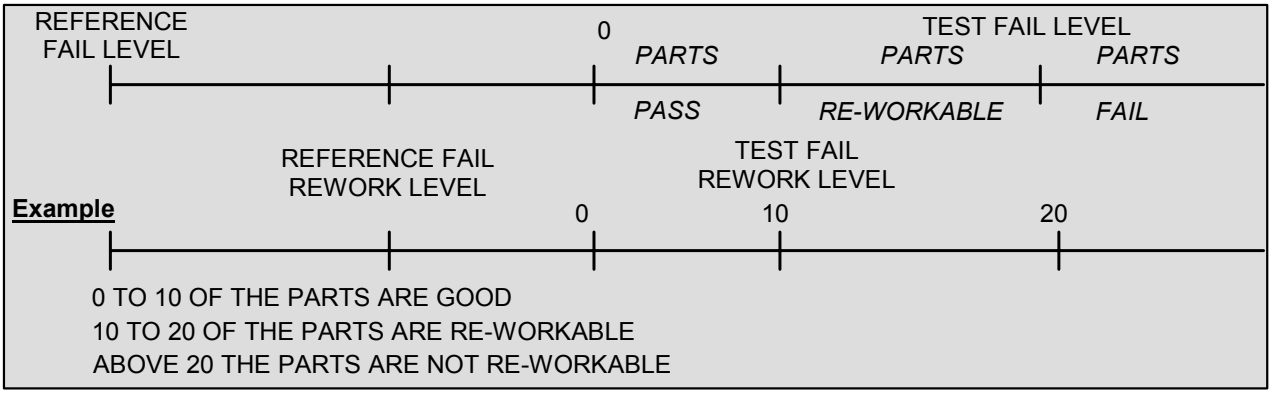


Adjust the differential Auto-Zero value if needed, the default value is proven stable (500 ms).



REWORK LIMITS

This option offers the option of two reject levels: normal reject level (the fail part cannot be repaired) and a re-workable reject level (the part is fail but may be reworked to become acceptable). This option is often used in casting processes, when parts may be treated via impregnation.



The associated parameters to be set are: **Test REWORK** and **Ref. REWORK**.

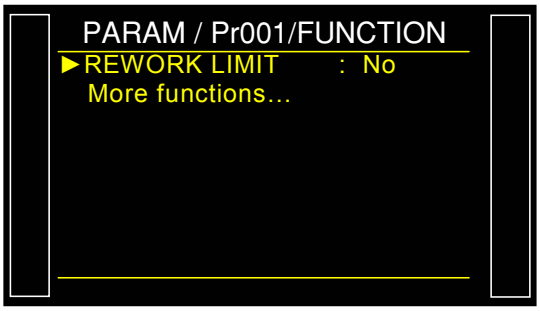
For re-workable parts, with multi-head configuration on the central unit or on the heads themselves, the Pass (**OK**) and Fail (**NOK**) outputs are both activated simultaneously.

When the recoverable reference reject value is zero, the program uses the symmetrical opposite sign value of the recoverable test reject (example: if the recoverable test reject is 10 Pa, then with the recoverable reference reject value set at zero, the program assumes the recoverable reference reject to be -10 Pa).

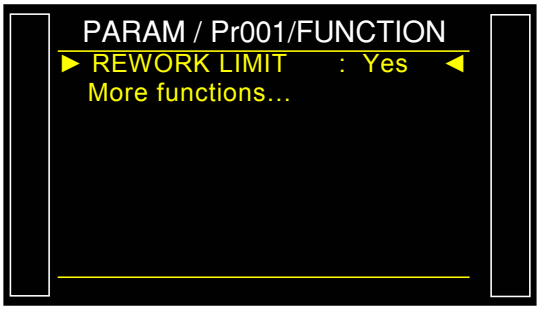
1. PROCEDURE

Activate the function or check if it checked.

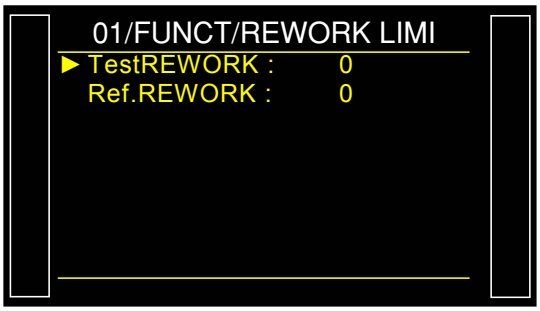
Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.

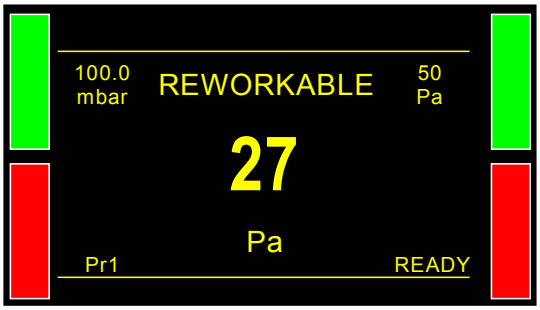


Adjust the Rework values for the Test side and the Reference side.



***Remind**: if the Reference value is set to 0, it assumes the same value as the Test with the opposite sign.*

When the part is "**Reworkable**", the display is like the following one.

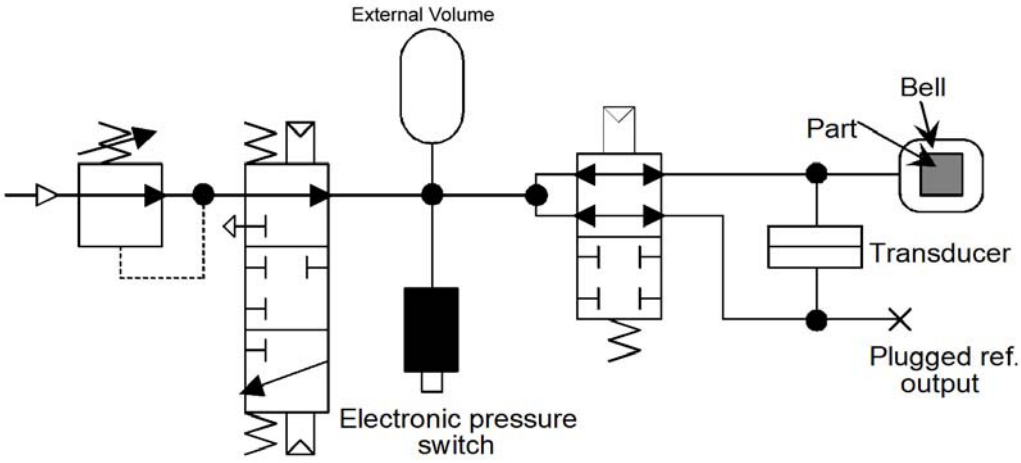


SEALED COMPONENTS

1. PRESENTATION

The sealed component mode is designed for leak measurement on sealed parts. The solution is to enclose the part in a sealed bell, to fill this bell and to measure the pressure drop in the part.

Principle:



The external volume is connected to the pressurization port of the instruments valve.

Volume fill:

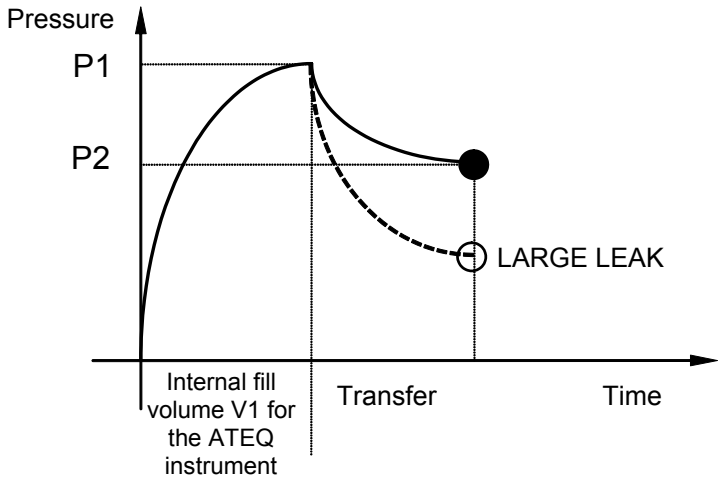
The external volume (V1) is filled to a pressure P1.

Part transfer:

The previously-filled internal volume (P1.V1) is opened to the chamber volume (V2), obtaining P2.V2. Through monitoring, the instrument detects large leaks. If the part has a large leak, the final pressure is lower than with a sealed part. Two limits (min. and max.) given as a percentage of the P1/P2 ratio are used to detect large leaks.

The solution is based on the relationship: **P1.V1 = P2.V2**

If the part is leaking, the final volume will be greater so the final pressure will be lower.



Test modes

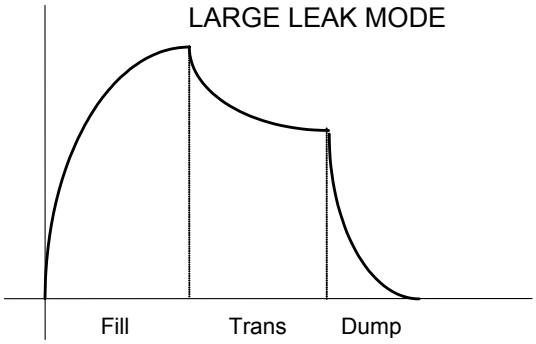
The **ATEQ** dedicated for sealed components can carry out the following tests:

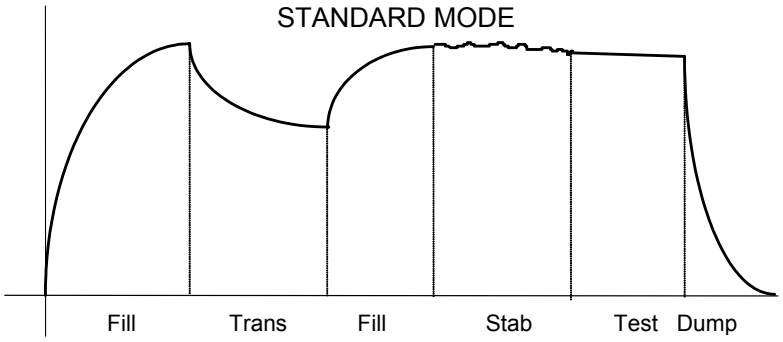
1. large leak test only,
2. large leak test followed by a finer leak test at a smaller pressure.

These two modes can be programmed from the instrument's front panel and are called:

- **Large leak** mode : Large leak test only,
- **Standard** mode : Large leak test, then small leak test.

Standard mode carries out a first cycle to identify large leaks and then adds a second cycle at nominal pressure to check for small leaks.





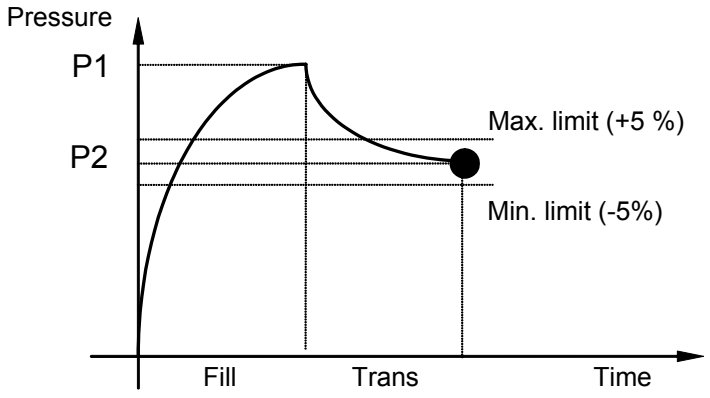
Carrying out the cycles and settings

For the instrument to detect large leaks, two learning cycles must be carried out: one on a pass part and one on a fail part.

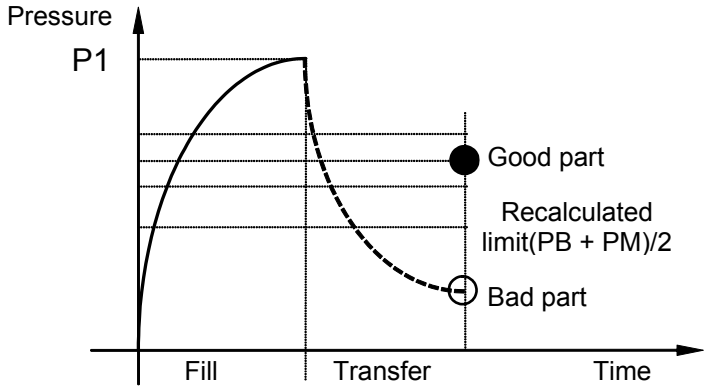
Learning cycles:

"PASS part" learning cycle: this cycle is compulsory before testing.

This P1 and P2 learning cycle automatically calculates and identifies the value of the pass part together with the maximum and minimum limits (+/- 5 % modifiable).



"FAIL part" learning cycle: this cycle is not compulsory. It calculates the actual minimum limit in relation to a fail part by taking an average between the value of a pass part and that of a fail part



The instrument allows for variations in input pressure. This is why the maximum and minimum parameters vary for each cycle.

At the end of a learning cycle (fill of the volume, volume transfer, dump) the **Pass part** and **End of Cycle** outputs are activated. If the volume is greater (large leak), the **Fail Part** and **End of Cycle** outputs are activated. If the volume is reduced (problem with the fixture) the **Alarm** and **End of Cycle** outputs are activated.

Learning cycles for pass parts and parts with a large leak are accessed through the main menu under special cycles.

Test cycles cannot be carried out unless learning cycles have previously been carried out.

2. LE 3 TYPES OF SEALED COMPONENTS

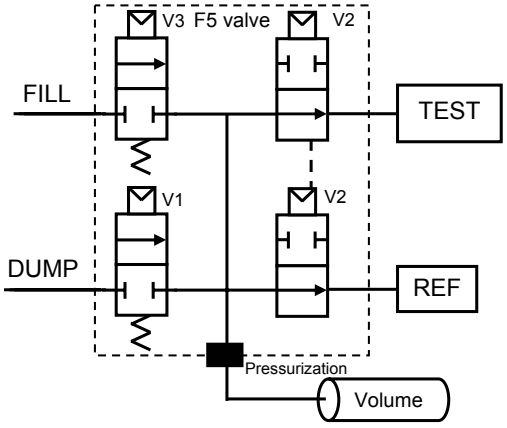
Because of the device hard configuration is different following the sealed components type, the type must be choose at the device order.

2.1. SEALED COMPONENTS 1

Standard version with the bell under pressure. See the presentation above.

Steps:

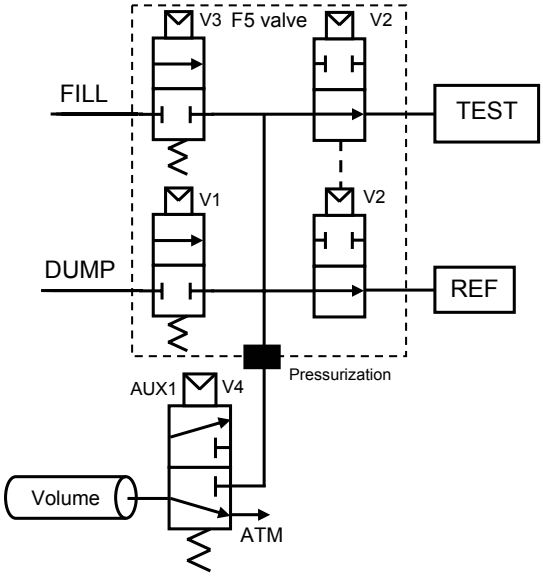
1) Insulation of the test part.
2) Volume fill.
3) Volume transfer to the test part.



2.2. SEALED COMPONENTS 2

Reverses quick sealed components.

1) Filling of the test part.
2) Transfer of the test part to the volume.



2.3. SEALED COMPONENTS 3

Reverses quick sealed components high accuracy.

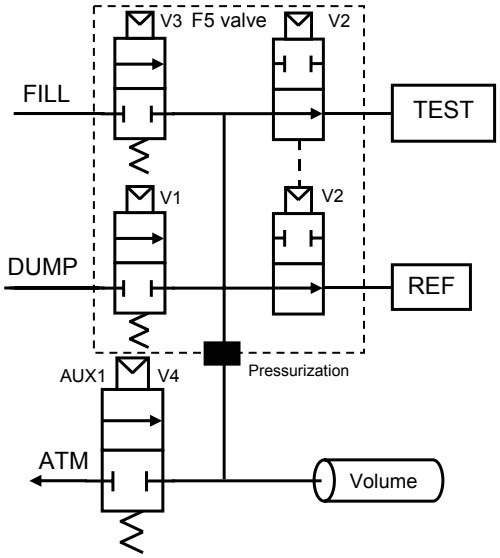
1) Filling of the test part, of the volume and pressurization volume.

2) Insulation of the test part.

3) Dumping of the volume and the pressurization volume.

4) Stop dump (volumes).

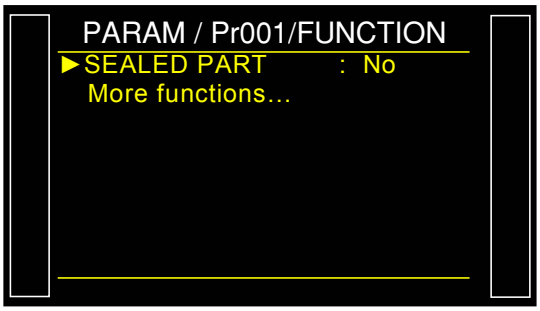
5) Transfer from the test part to the volumes.



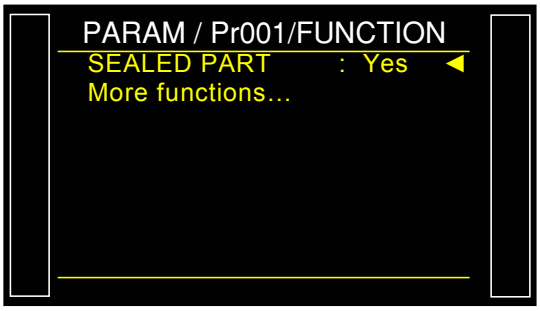
3. CONFIGURATION

Activate the function or check if it checked.

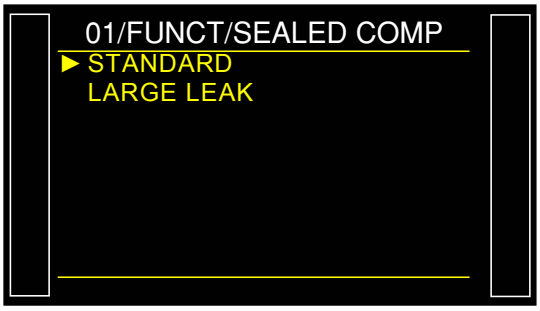
Press the OK key, the cursor slide to the right hand.



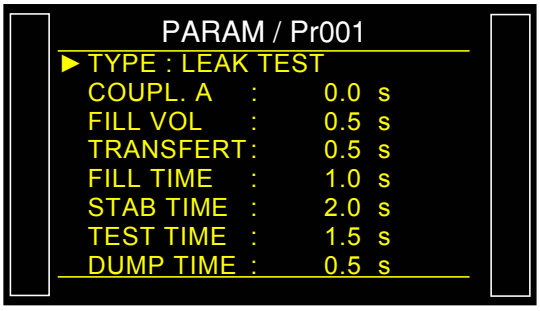
By using the arrows, select "**Yes**" and validate with the OK key.



Select the mode: "**STANDARD**" or "**LARGE LEAK**".



When selected, two parameters are added to the program: "**Fill volume time**" and "**Transfer time**" that you have to inform (the transfer parameter can't be less than 0.5s).



4. SEALED COMPONENT SPECIAL CYCLE LEARNING

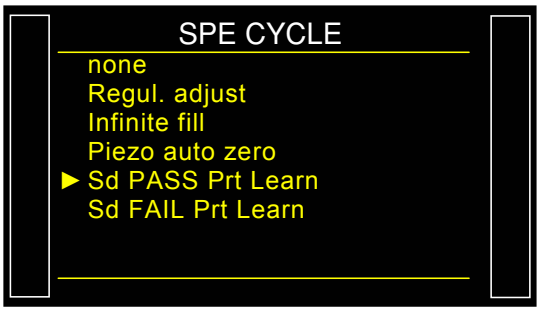
For sealed components, learning cycles for Pass and Fail must be performed so that the instrument calculates the parameters.

As the learning cycles have not been carried out, the device cannot run test cycles.

- **Sealed PASS Part Learn:** This learning cycle calculates and identifies the value of the pass part together with the maximum and minimum limits (+/- 5 % modifiable). This cycle is compulsory for sealed component mode.
- **Sealed FAIL Part Learn:** this cycle allows learning the pressure parameters for a fail part by taking an average between the value of a pass part and that of a fail part. This cycle is not compulsory.

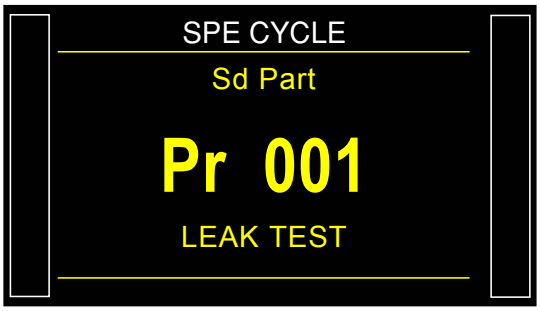
From the main menu, enter the special cycle menu.

In the special cycle menu, select "**Sd PASS Prt Learn**".



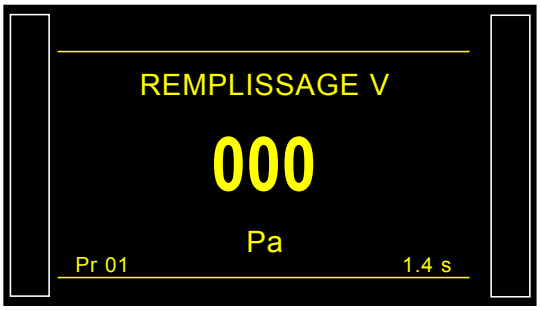
***Remind**: it's important to have a pass part plugged.*

The cycle screen is displayed confirming the special cycle selection. Ensure that a pass part is inside the chamber and run the special cycle by pressing the **START** key.

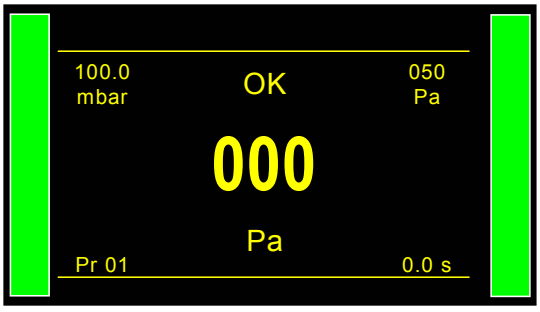


The learning cycle is running with the following steps:

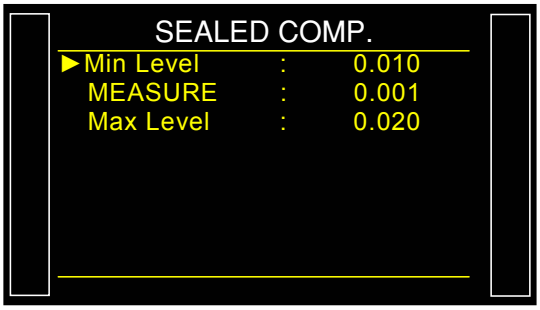
VOLUME FILL, **VOLUME TRANSFERT** and **TEST**.



The final result must be Pass (**OK**).

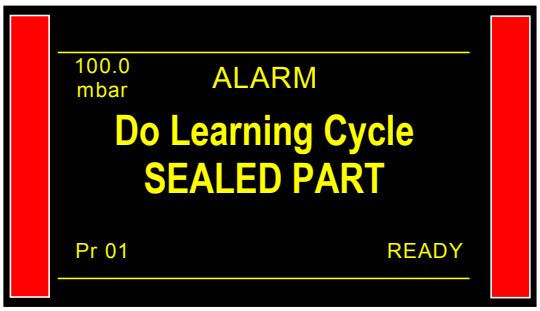


The finalised sealed component parameters can be reviewed and modified by the user in the functions menu of the program or by pressing the OK key.



Do the same process for the **FAIL PART** learning cycle (this cycle is optional) with a fail part inside the chamber.

If the sealed part special cycle is no carried out before, the alarm message "**Do Learning Cycle**" is displayed.



N TESTS

1. PRESENTATION

N test function: repetition of the test when the result is **near the reject level**.

It consists in conditionally repeating the test time to optimize the cycle time (rapid decision making on parts with large leaks or very good parts).

The bad parts (bad but close to the reject level) are subject to a longer test.

The instrument repeats the test time **3 times** maximum.

CYCLE PROGRESS:

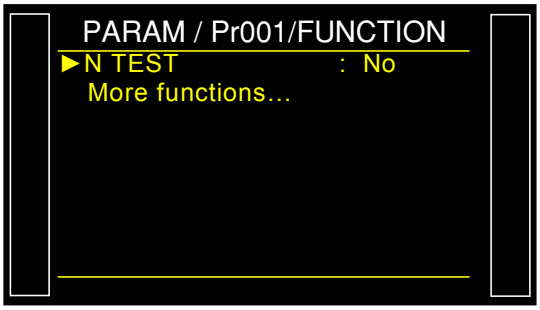
Step 1:	: 0 < **Measured value** < Reject = **Good Part** (standard cycle). Reject < **Measured value** < Tolerance **A** = **Run Test time Again**. **Measured value** > Tolerance **A** = **Bad Part**.
Step 2:	0 < **Measured value** < Reject = **Bad Part** (standard cycle). Reject < **Measured value** < Tolerance **B** = **Run Test time Again**. **Measured value** > Tolerance B = **Bad Part**.
Step 3 (standard step) :	0 < **Measured value** < Reject = **Good Part** (standard cycle). **Measured value** > Reject = **Bad Part**.

This function **cannot be enabled** in addition to the following functions: ATR; Operator Test; Burst Test; Temperature Correction; Blockage Test). During the CAL learning cycle CAL, this function is not activated.

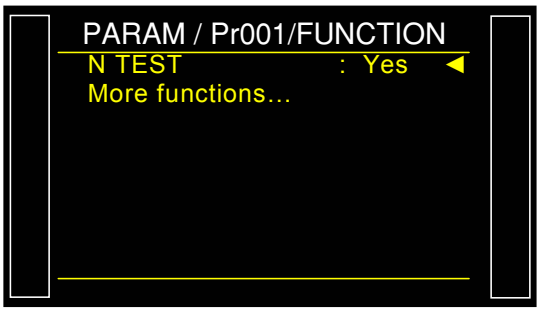
2. PARAMETRAGE

Activate the function or check if it checked.

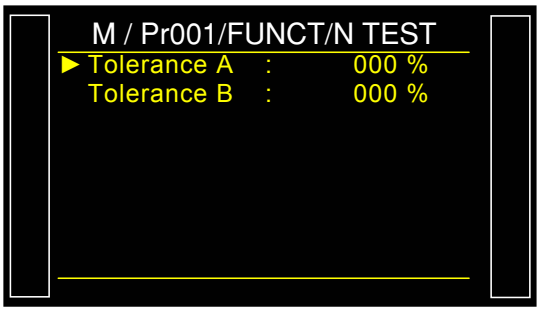
Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



Adjust the tolerances values **A** and **B** as a percent of the reject value.



REFERENCE VOLUME

1. PRESENTATION

The program uses the programmed test volume to measure the normal flow at the test port.

When the reference port volume is different the test port volume, it is possible to set parameters for the exact value of the reference volume to obtain correct measurements in the event of results displaying negative values.

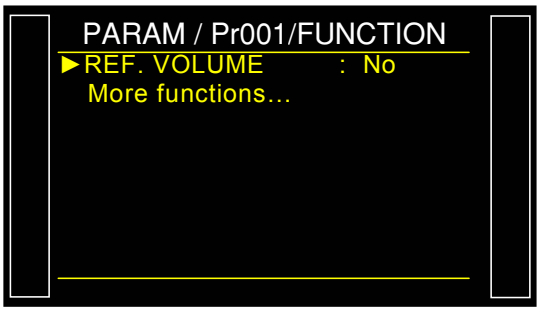
This function may only be used with flow measurement units: cm^3/min, cm^3/s, cm^3/h, mm^3/s, ml/s, ml/min or ml/h.

2. PARAMETRING

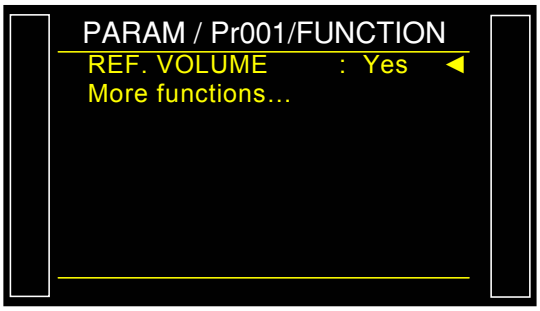
Ensure that the reject unit is a flow unit (see above).

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.activée.

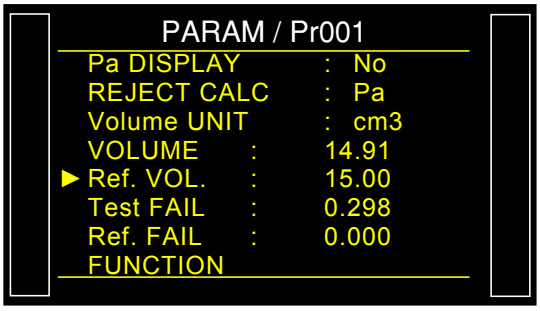


By using the arrows, select "**Yes**" and validate with the OK key.



Adjust the reference volume value.

This parameter is also available in the program parameters under the name "**Ref. VOL.**".



STAMPING FUNCTION

1. PRESENTATION

This option is used to activate a pneumatic output which marks the part (for example using a pneumatic cylinder).

Parameters can be set for the conditions and duration of marking.

This function is available either with an external output and either by a pneumatic output (one of the pneumatic outputs on the automatic connectors is used) and this option requires two electrical outputs:

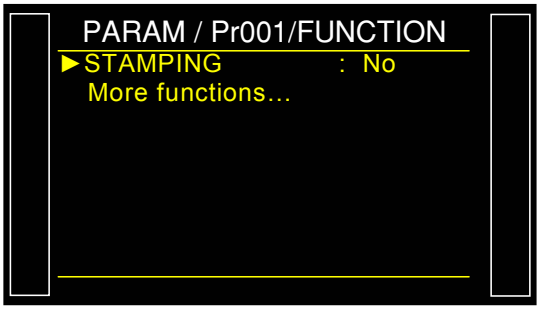
- ✓ one internal for the pneumatic output cabling,
- ✓ one external for the "customer" cabling.

The output is activated at the end of test time for the programmed hold time.

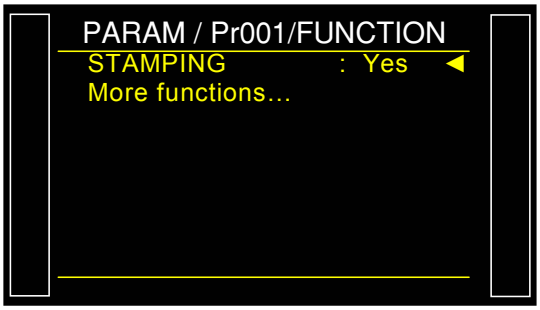
2. PROCEDURE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



Adjust the stamping parameters.

DURATION = holding time.

<u>Stamping conditions</u>:

ALL RESULTS = all conditions,

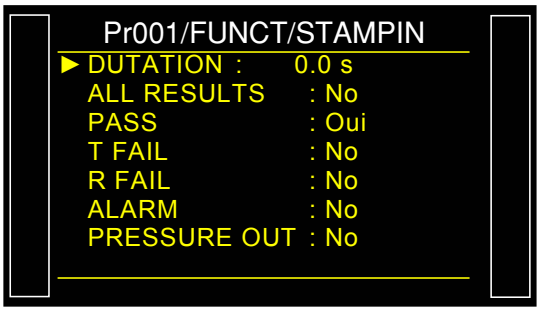
PASS = good part,

TEST FAIL = bad part on the test,

REF FAIL = bad part on the reference,

ALARM = alarm triggered,

P OUT OF LIMITS = pressure error.



TEMPERATURE CORRECTION 1

1. PRESENTATION

This function is used when temperature change within the part has a significant influence on the test result. This function will not work after part washers when any trace amounts of water exist in the part or if the fixture tooling causes volumetric changes in the test circuit during the correction measurement. The **TEMPERATURE CORRECTION 1** function enables the adjustment of the leak value of a part by measuring pressure variation caused by the changing temperature of the part.

There are two parameters to be set:

- ✓ The test time during which the study (learning) of this pressure should be carried out.
- ✓ The **percentage** of the variation to be taken into account.
- ✓ **OFFSET**: leave this value to 0 by default. Difficult to use reserved for special applications.

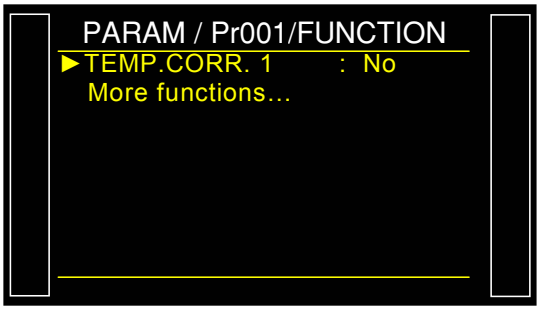
Example: a pressure variation of 15 Pa during 2 test seconds, with a percentage of 60 %, will apply a correction of 9 Pa on each test result (15 x 60%= 9).

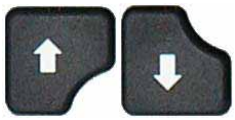
2. CONFIGURATION

Activate the function or check if it checked.

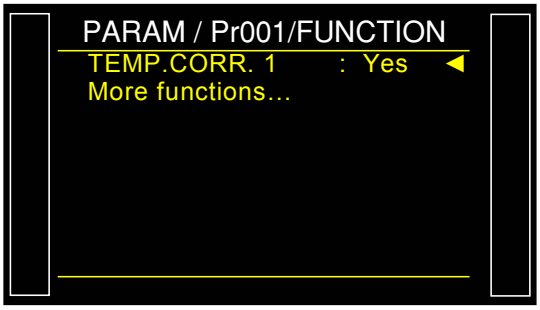
Press the

key, the cursor slide to the right hand.

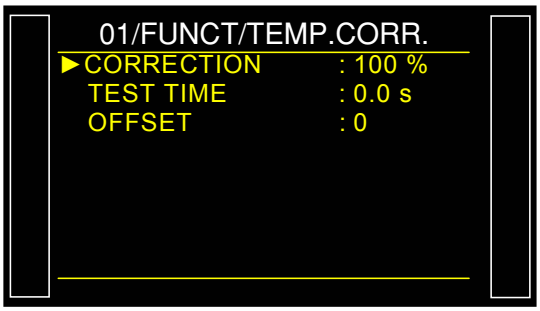


By using the  arrows, select "**Yes**" and validate with the

key.



Then adjust the parameters.

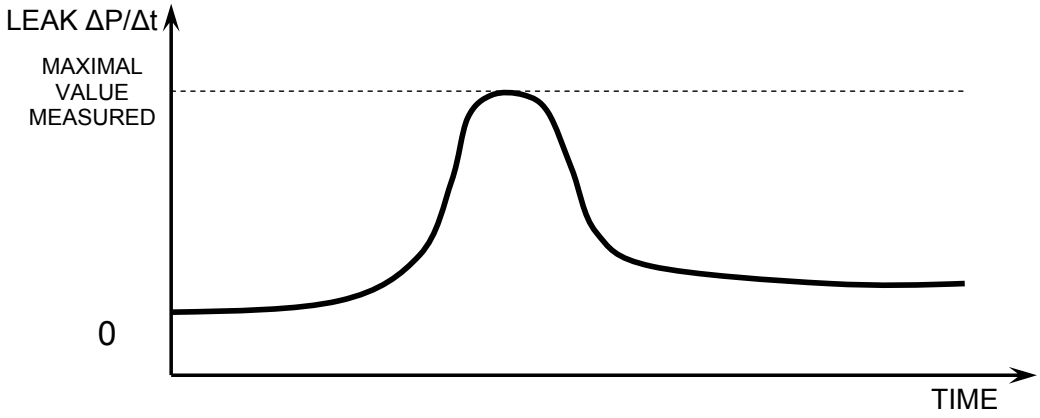


PEAK HOLD

1. PRINCIPLE

The peak hold mode is used to measure a part dynamically. The instrument measures the leak, which can change at a given moment during the test. The instrument stores the greatest pressure drop (ΔP/Δt) and then displays it at the end of the test.

This function is important in circumstances where the test part changes during the test cycle. The system checks the part for leaks in ΔP/Δt throughout the change and the leak is measured continuously. At the end of the test cycle, the instrument has stored the maximum instantaneous leak (the greatest leak) recorded during the test and displays the result.

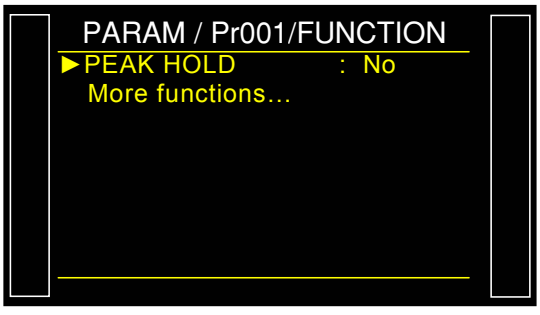


Peak measurement mode only works in ΔP/Δt and excludes the use of ATR mode.

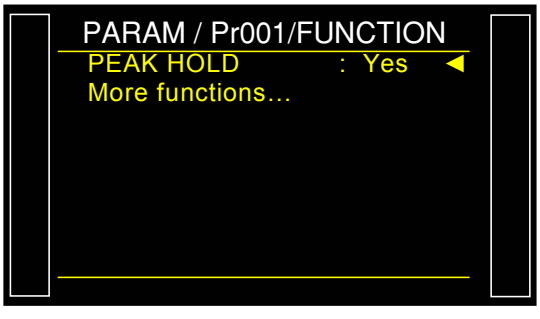
2. CONFIGURATION

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



SIGN

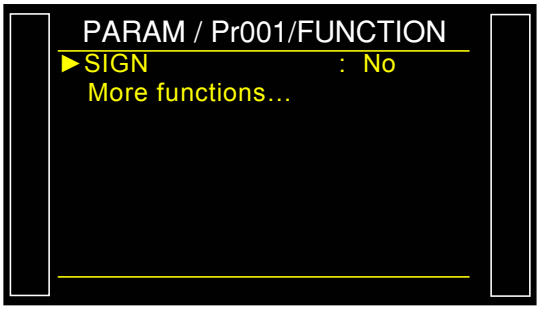
1. PRESENTATION

The **SIGN** function enables reversing the sign (positive or negative) of the measurement result. This function is useful in case of a vacuum application or indirect measurements as it allows the display of a positive leak result.

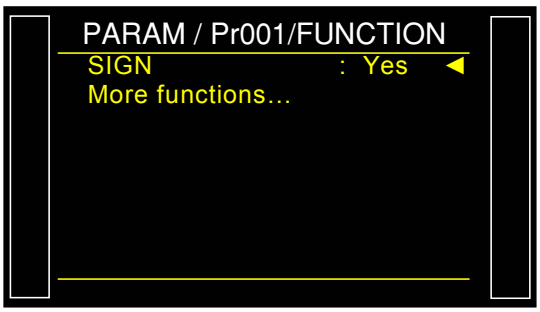
2. PARAMETRAGE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



The "**Sign**" function when validated, changes the leak value sign.

Example: if the result is -004 Pa, the display will be 004 Pa and vice versa.

FILTER

1. PRINCIPLE

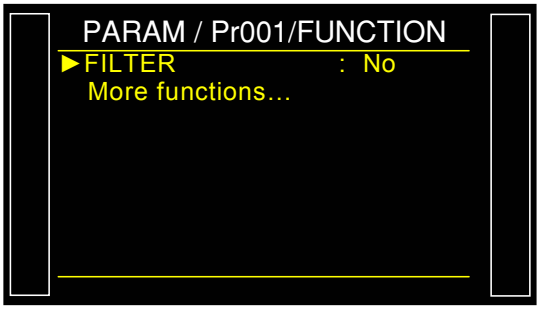
This function enables the slowing down of the sampling speed, by performing an average over the set measurement time; this makes the displays value more readable during quickly changing measurements value.

Cette fonction se justifie avec des unités liées au temps (Pa/s, cm^3/s, l/min, etc.).

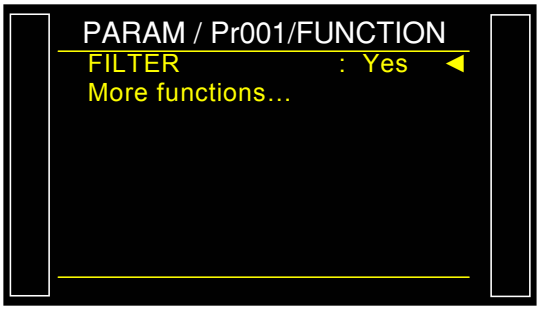
2. CONFIGURATION

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

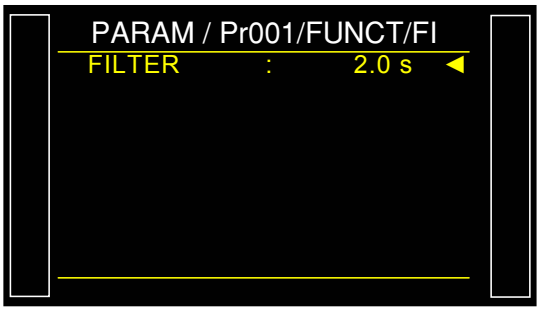


By using the arrows, select "**Yes**" and validate with the OK key.



Adjust the Filter (time) parameter.

FILTER time: maximum duration of the averaging of the measured result.



SPECIAL CYCLES

1. PRESENTATION

To run, some functions needs one (or several) special cycle to be carry out, for further information about this special cycle, see the functions sheet.

The availability will vary depending on what is checked in the extended menus or according to the optional features built into the instrument.

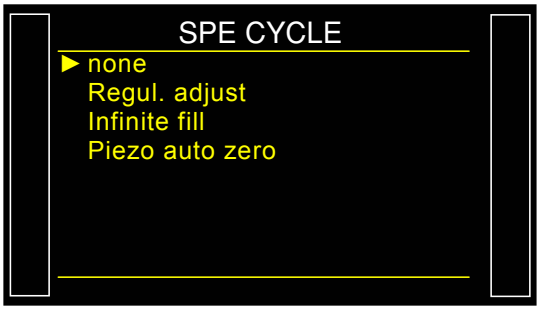
The special cycle is carried out with the parameters of the active program.

2. RUN A SPECIAL CYCLE

From the main menu, enter the special cycle menu.

In the special cycle menu, select the special cycle to carry out, then validate with

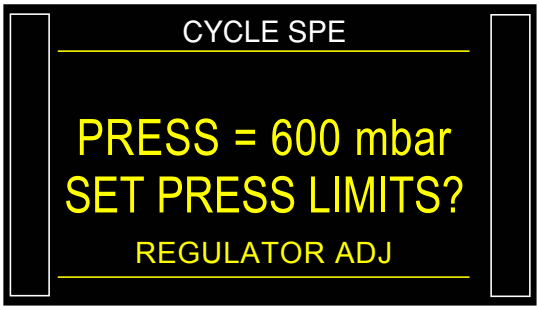
.



The cycle screen is displayed confirming the special cycle selection. Press the "**START CYCLE**" key.

To stop, press the key. In some cycles the stop is automatic.

For others special cycles, see the sheet corresponding to the function.



The screen display the current program.

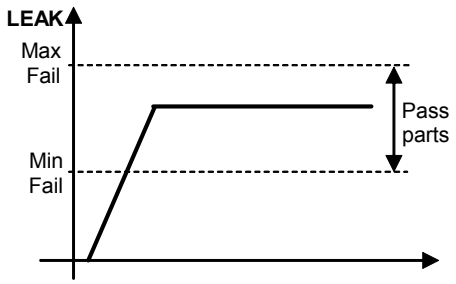
3. SPECIAL CYCLES LIST

Special cycle	Function
➢ none:	No special cycle selected.
➢ Regulator 1 adjust:	Cycle to set regulator number 1.
➢ Regulator 2 adjust:	Cycle to set regulator number 2.
➢ Infinite fill:	Cycle to pressurize test part under for an infinite time.
➢ Piezo auto zero:	Cycle to perform a zero of the pressure transducer and re-linearization of the electronic regulator.
➢ Sealed component learning, pass part:	Cycle to learn the pressure parameters for a good part in case of a sealed component measurement. This learning cycle is compulsory.
➢ Sealed component learning, fail part:	Cycle to learn the pressure parameters for a bad part in case of a sealed component measurement.
➢ Calibration check by volume:	Cycle started manually by the operator to carry out calibration check by volume with a good part.
➢ CAL learning:	Cycle to carry out learning in calibrated Pascal or Pascal/sec mode on a known standard leak.
➢ CAL check:	Cycle for auto-diagnostics in calibrated Pascal mode (see previous function) within a tolerance determined by percentage limits.
➢ Check and CAL:	Cycle same as the previous and if the result is out of the thresholds, the device carries on a new learning cycle.
➢ ATR learning cycle:	Cycle to enter the ATR parameters if they are unknown. This should be performed after each start-up of the instrument, or after a long period with no test cycles.
➢ Volume compute:	Cycle to estimate the volume of the test circuit. Flow units only.

FLOW LEVEL FUNCTION

The flow level function adds in the parameters a minimum fail parameter.

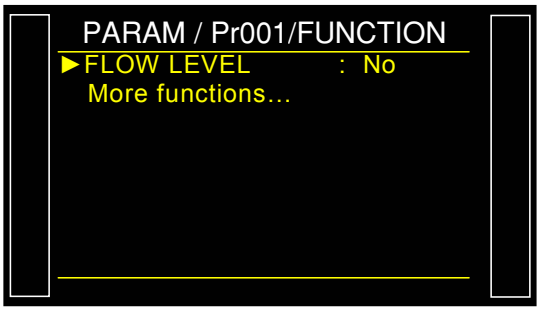
If the measurement result is below this level the part is declared fail.



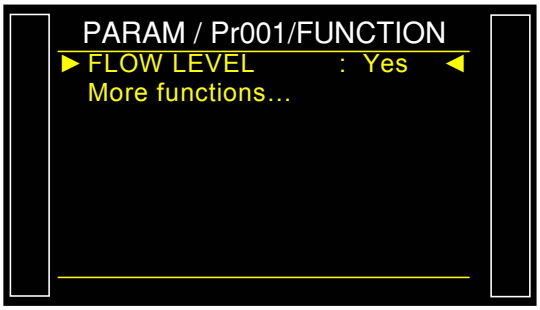
1. CONFIGURATION

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

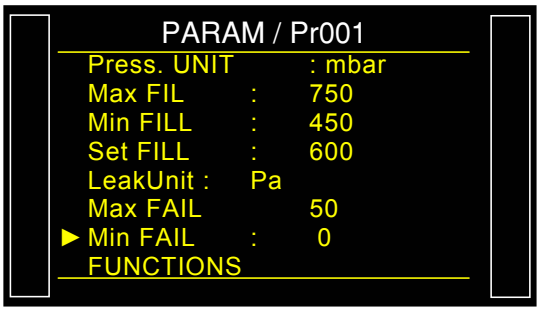


By using the arrows, select "**Yes**" and validate with the OK key.



Back to the test program parameters.

Then the "**Min Fail**" parameter appears.



*As the "**Flow Level**" function is activated, the "**Reference Fail**" parameter disappears.*

NO NEGATIVE

1. PRINCIPLE

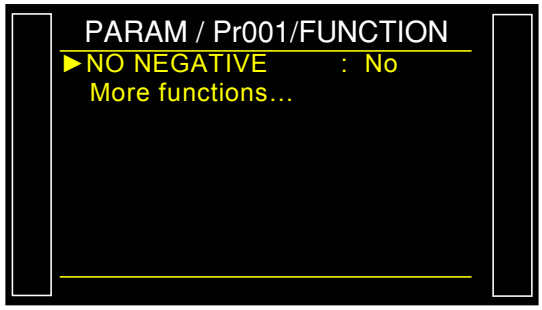
The **No Negative** function the measurement display becomes zero when the result is negative.

This function is useful when negative measurement results shouldn't be displayed to the user or sent to the PLC.

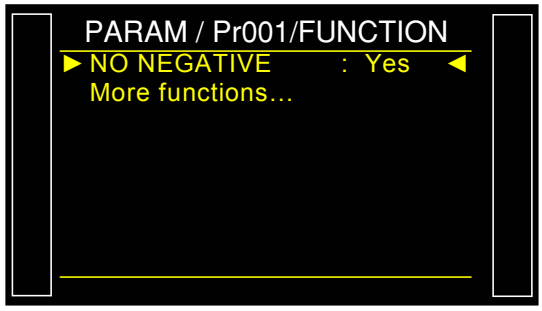
2. CONFIGURATION

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



The "**No Negative**" function, when validated, displays the value 0 is the result is negative.

Example : if the measurement result is -014 Pa, then the display will be 000 Pa.

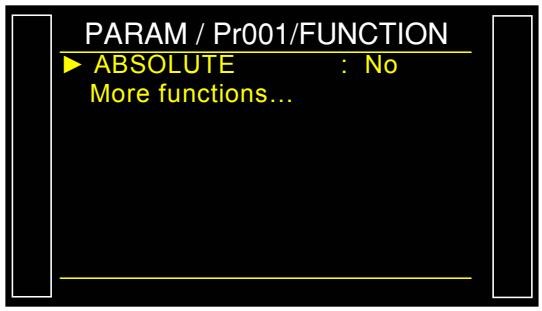
ABSOLUTE

The **Absolute** function displays the absolute value of the result. This function is useful when negative measurement shouldn't be displayed to the user or sent to the PLC.

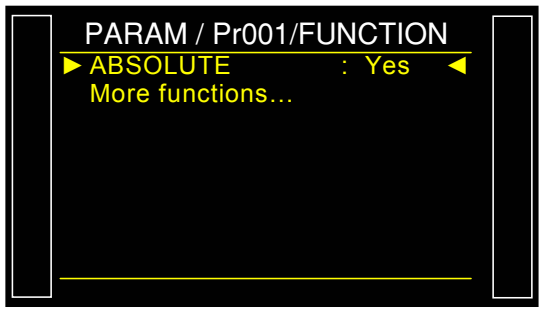
1. PARAMETRAGE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



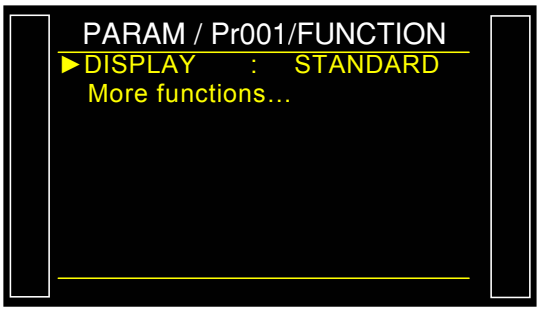
The "**Absolute**" function, when validated, displays the absolute value of the result.

Example : if the measurement result is -014 Pa, then the display will be 014 Pa.

DISPLAY MODE

The **DISPLAY MODE** function allows adjusting the number of decimal displayed by the instrument. Available only for the flow units.

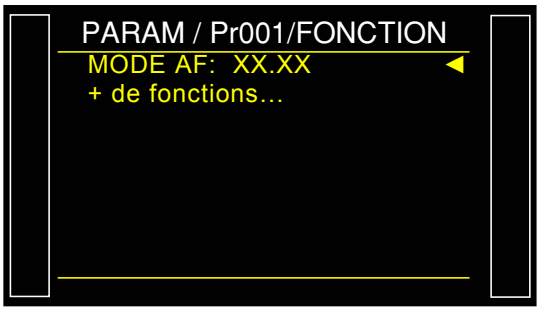
1. PARAMETRAGE



Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.

By using the arrows, select "**Yes**" and validate with the OK key.



Select the preferred format.

- **STANDARD**
- **XXXX**
- **XXX.X**
- **XX.XX**
- **X.XXX**

*In the "**Standard**" mode, the instrument displays the result with the most optimized format.*

DUMP OFF

The "**Dump Off**" function when validated, cancels the dump step in the program parameters. The measurement cycle will run without dumping the test and reference parts.

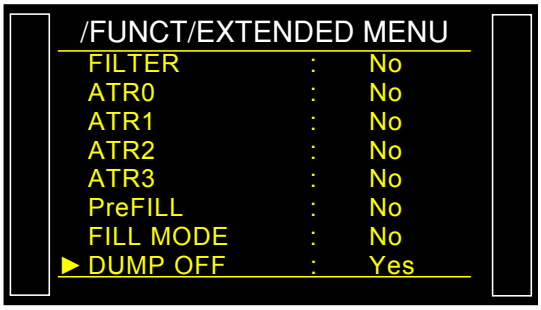
The Test and Reference circuits and the parts connected to the instrument will stay pressurized.

1. CONFIGURATION

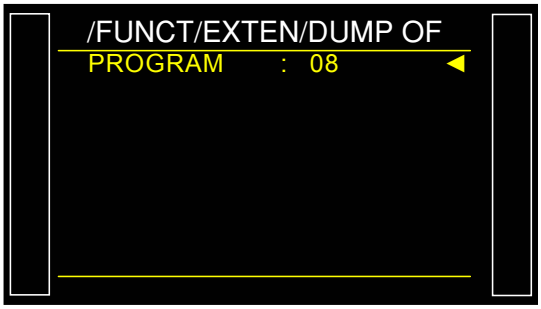
2. PARAMETRAGE

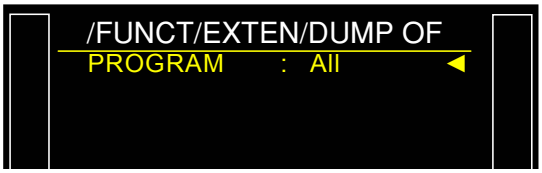
Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



Then Select the program associated to the "**Dump Off**" function, press the OK button, the cursor switch to the right hand, by using the arrows, select the program numeber and validate by pressing OK key.

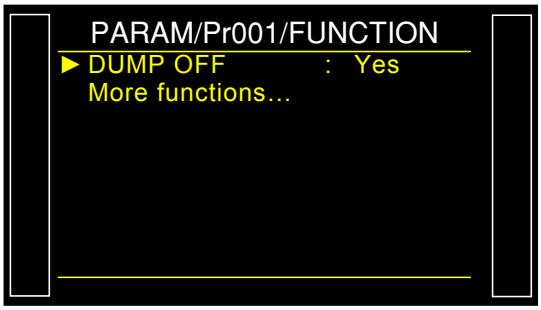




***Note**: when going after the last program, the option "**All**" is displayed, this is to validate the "**Dump Off**" function for all the programs.*

Check the "**Dump Off**" function is validate by "**Yes**" in the program functions OK .

When this function is validated, the dump step won't appear in the program test parameters.



***Important information!** If the function is cancelled or deleted, the dump parameter in the program will have the value 0 (zero). It will be the set with the new value*

SERVICE SPECIAL CYCLES

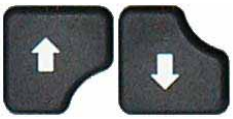
1. AVAILABLE SERVICE SPECIAL CYCLES

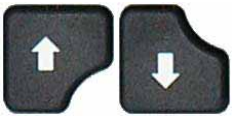
These special cycles enable the operator to adjust the pressures and service the valves and pressure sensors.

Special cycle	Function
➢ Calibration of pressure sensor 1 on regulator 1:	This cycle enables the calibration of the pressure sensor 1 with the pressure adjusted on regulator 1. A pressure gauge can be connected to the front panel quick disconnect, the test or the reference port. The display on the instrument can be compared to the pressure gauge.
➢ Calibration of pressure sensor 1 on regulator 2:	This cycle enables the calibration of the pressure sensor 1 with the pressure adjusted on regulator 2. A pressure gauge can be connected to the front panel quick disconnect, the test or the reference port. The display on the instrument can be compared to the pressure gauge.
➢ Calibration pressure sensor 2:	Identical to the previous special cycle with pressure sensor 2 if installed in the instrument.
➢ Differential sensor calibration:	This cycle enables the calibration of the differential sensor. It is important to ensure that the test pressure is 0.
➢ Valve Auto-test:	This special cycle enables the checking of the valve and the detection of a leak defect if there is one.

To run a special cycle, select it in the **Special Cycles** menu, then press the button. To stop it, press the button. In some cycles the stop is automatic.

1.1. ACTIVATION

From the "**SERVICE**" menu, select the "**SPECIAL CYCLES**" menu by using the  arrows.

By using the  arrows, select "**Yes**" the "**SPECIAL CYCLES**" function and validate with the

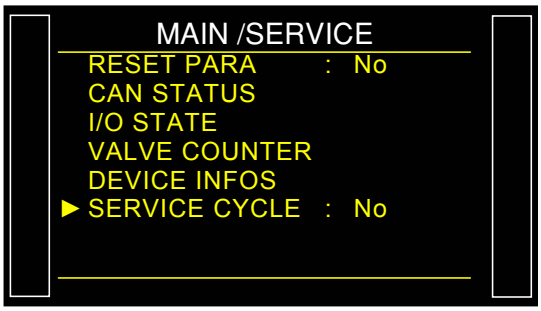
key.

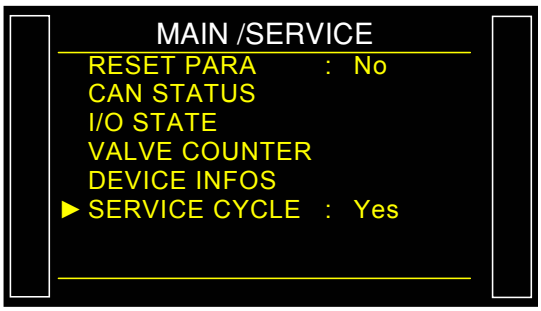
To make appear the services special cycles, in the special cycle's menu.

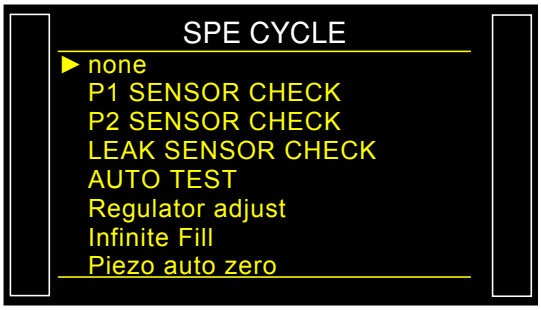
Back to the main menu, and then enter the special cycle's menu.

The service special cycles appears in this menu.

Select the service special cycle you want and press the "**START CYCLE**" to run.







1.2. STARTING THE SERVICE SPECIAL CYCLES

The service special cycles enable running predefined cycles to diagnose different system of the instrument (pressure sensors and valves).

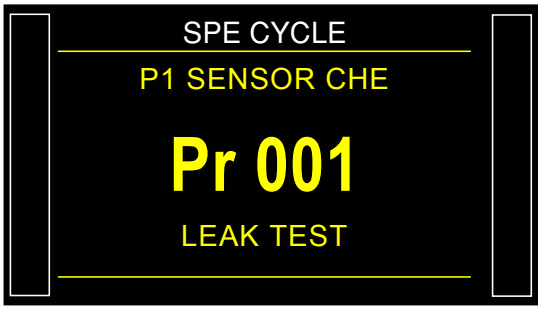
1.2.1. Sensor calibration

These special cycles enable the checking of the pressure and differential pressure sensors, they therefore enable the display of the values measured and their comparison with calibrated master leaks connected to the test outputs of the instrument.

1.2.1. 1) Piezzo sensors

This process is the same for the following special cycles: **P1 REG1 CHECK**, **P1 REG2 CHECK** and **P2 SENSOR CHECK**.

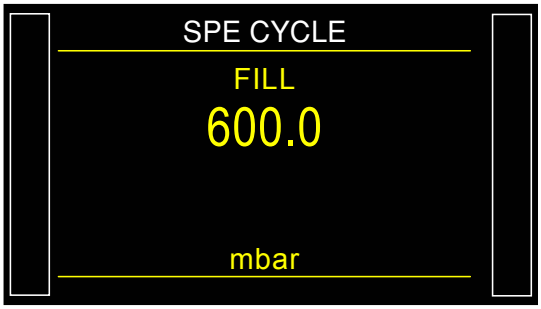
Press the **Start** key to run the special cycle .



The device carries out an infinite fill and displays the current pressure.

The sensor calibration is possible.

Stop the special cycle by pressing the **RESET** key. .



1.2.1. 2) Differential sensor

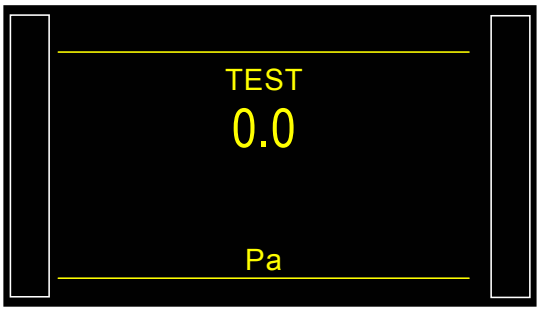
This cycle enables the calibration of the differential sensor. It is important to ensure that the test pressure is 0.

Press the **Start** to run the special cycle .

The device carries out a dump, checks if the pressure is 0 then carries out a test and displays the measured pressure.

The verification of the sensor can start.

Stop the special cycle by pressing the **RESET** key .



1.2.2. Valve Auto-test

The **AUTO-TEST** cycle must only be carried out with caps on the test and reference port.

The test parameters are automatically configured according to the active program (test pressure) and the characteristics of the instrument.

The device returns to the "**Cycle**" menu and shows the special cycle selection.

Plug the caps on the test and reference outputs.

Press the **Start** to run the special cycle.

Three complete cycles, Fill; Stabilization, Test and Dump are carried out.

During the Auto-test, the device displays the measured pressure.

The cycle stops automatically, if the valve is functioning properly, the instrument displays "**TEST = PASS**".

If the valve is leaking or with a fault, the following message appears:

LEAK FAULT

TEST = FAIL

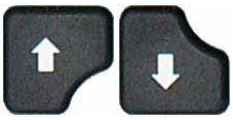
DATE / TIME

This function adjusts the date and the time of the instrument.

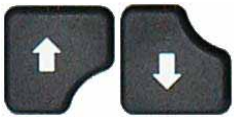
1. PROCEDURE

From the "**CONFIGURATION**" menu, select the "**AUTOMATISM**" menu and then press the

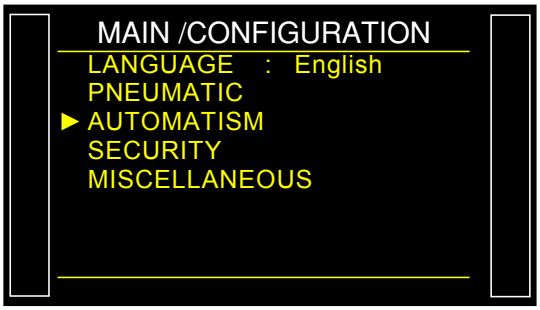
button

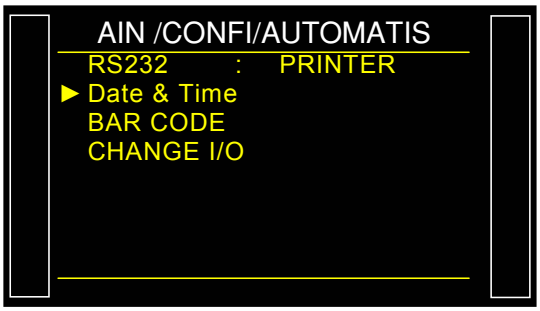
By using the  arrows, select the "**Date & Time**" menu and validate with the

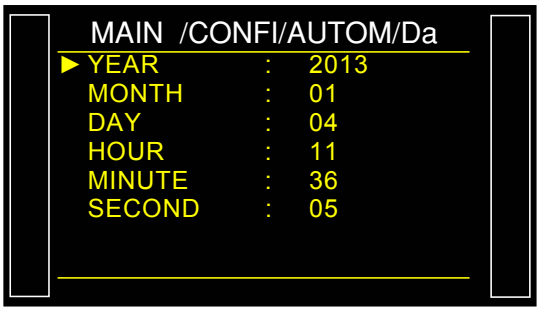
key.

Then by using the  arrows, select the date and time parameter to configure and validate with the

key.







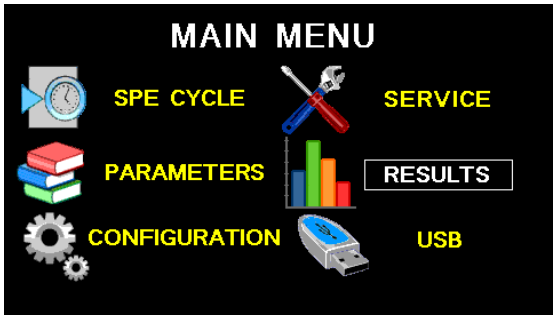
STORAGE (SAVE ON)

This menu defines the storage destination for the results files: Internal Memory or USB key.

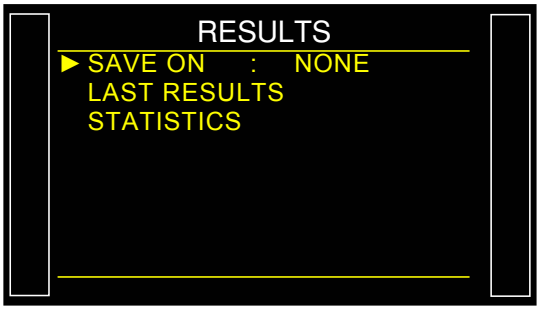
1. PROCEDURE

Enter the "**RESULT**" menu

and validate with the OK key.



By using the arrows, select the "**SAVE ON**" menu and validate with the OK key.

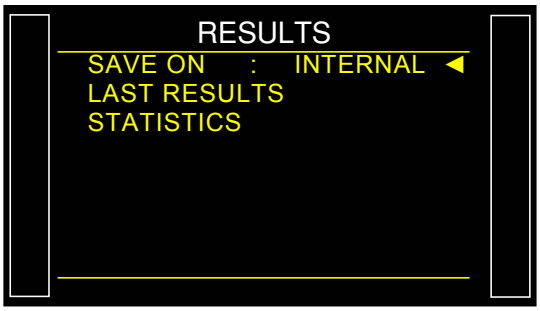


The **SAVE ON** menu: allows choosing the destination of the save file results.

NONE: the results are not saved.

INTERNAL: save of the results file in the internal memory of the device.

USB: save of the results file in a memory USB key connected to the device (USB port).



In the "**USB**" mode, if no USB memory key is connected to the device; all the results will be lost.

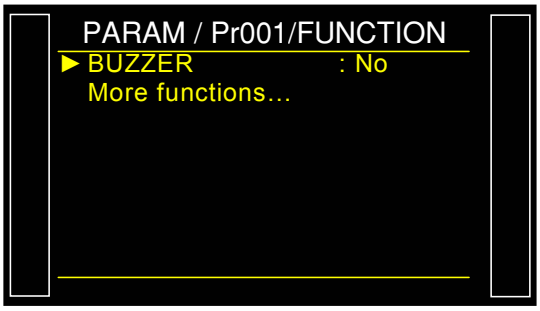
BUZZER

This menu is used to manage when the buzzer will sound.

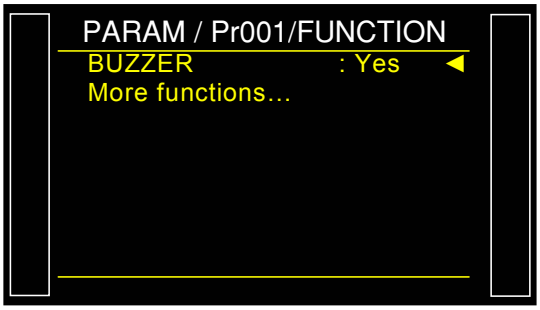
1. PROCEDURE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the ↑ ↓ arrows, select "**Yes**" and validate with the OK key.



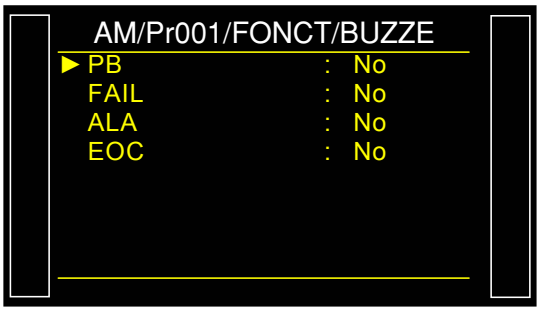
Then by using the ↑ ↓ keys select the buzzer trigger mode:

PB = OK : at each pass, the buzzer will sound.

FAIL = Fail part, at each fail part, the buzzer will sound.

ALA = Alarm : if an alarm is triggered, the buzzer will sound to warn the user.

FDC = Fin de cycle : at each time the device ends its cycle, the buzzer will sound.



Select "**Yes**" and then validate with the OK key.

***Note**: Several options can be checked.*

Uncheck all options if you do not want the buzzer to sound.

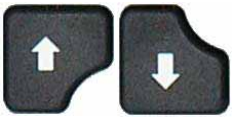
LANGUAGE

This function sets the language displayed by the instrument. Several languages are available. Two languages can be stored in the instrument's internal memory, English by default and one other optional language.

1. PROCEDURE

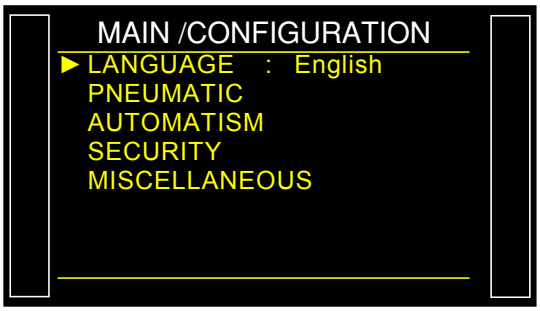
From the "**CONFIGURATION**" menu, select the "**LANGUAGE**" menu and then press the

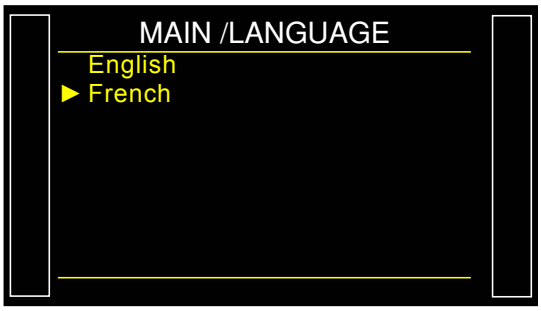
button

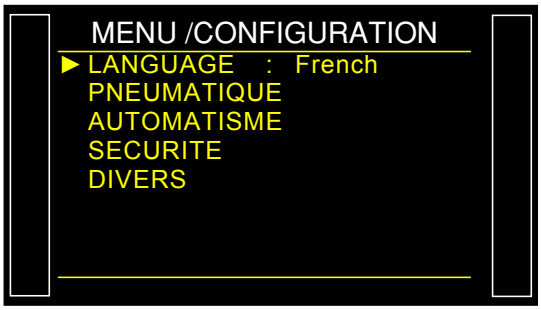
By using the  arrows, select the language you want and validate with the

key.

The menus are displayed with the selected language.







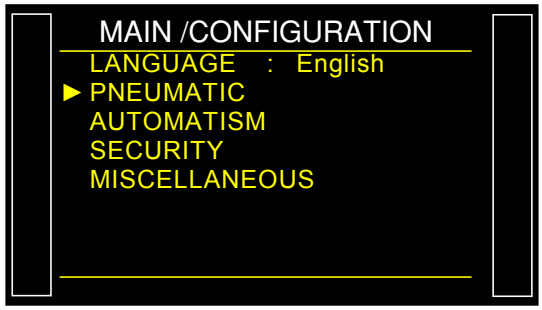
ELECTRONIC REGULATOR

The "**ELECTRONIC REGUL.**" is displayed when one or two electronics regulators are installed into the instrument.

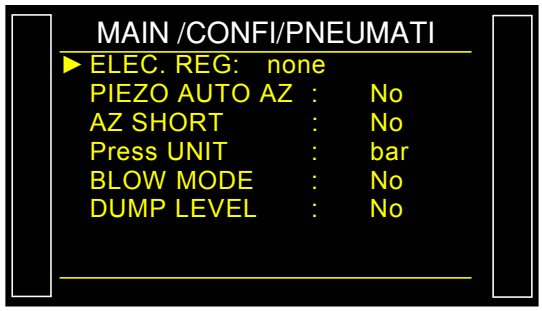
This function allows selecting or not the electronic regulator.

1. PROCEDURE

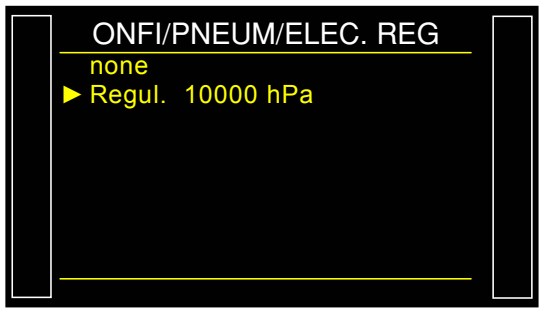
From the "**CONFIGURATION**" menu, select the " **PNEUMATIC**" menu and then press the OK button.



By using the arrows, select the "**Date & Time**" menu and validate with the OK key.

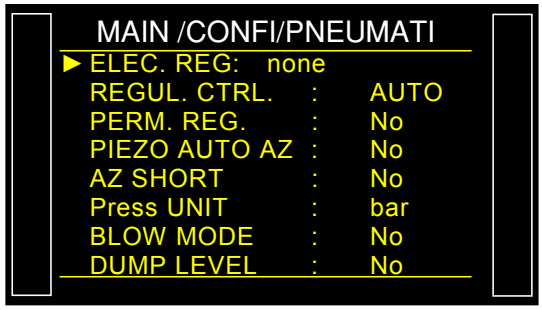


Then by using the arrows, select the regulator you want or "**none**" and validate with the OK key.



***Note**: if a second electronic regulator is installed in the device, it appears in this menu.*

Then validate with the OK key.



REGULATOR CONTROL

The **REGULATOR CONTROL** function is displayed when an electronic regulator is installed in the instrument.

If there is no air pressure supply, the instrument will display **REGULATOR ERROR**.

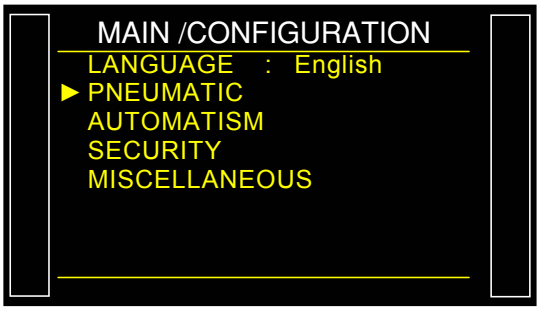
When the instrument is configured on **EXTERNAL**, the instrument awaits a press on the **RESET** key to resume operation.

When the instrument is configured on **AUTO** it constantly attempts to resume operation. A prolonged operation of the regulator in this mode and without compressed air could cause heating up and premature wear.

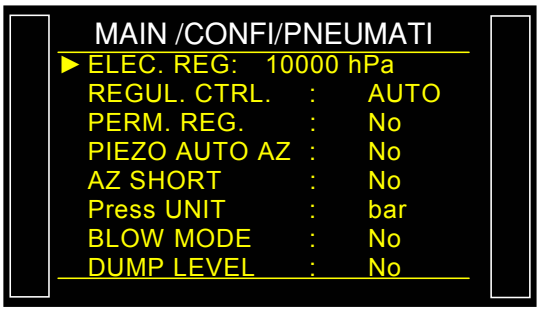
***ATEQ** strongly suggests leaving the setting to **External** except in particular circumstances.*

1. PROCEDURE

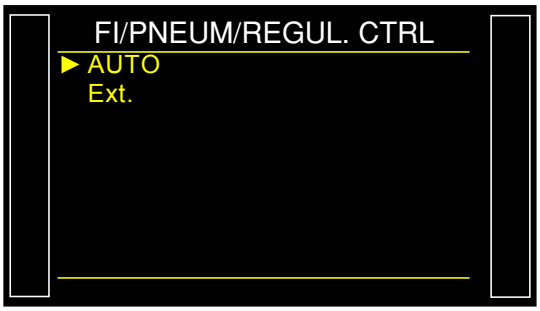
From the "**CONFIGURATION**" menu, select the "**PNEUMATIC**" menu and then press the OK button.

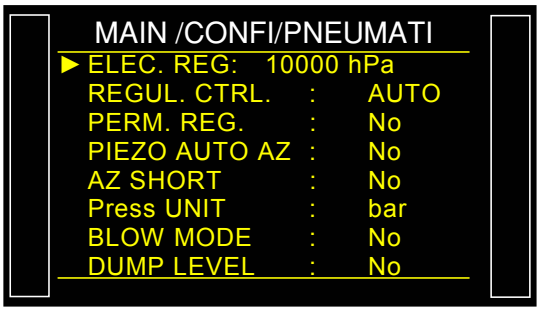


Puis à l'aide des flèches sélectionner le menu "**REG. ELEC**" puis valider en appuyant sur OK .


MAIN /CONFI/PNEUMATI
► ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

Then by using the arrows, select the option "**AUTO**" or "**Ext.**" you want and validate with the OK key.




MAIN /CONFI/PNEUMATI
► ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

AUTO: constantly attempts resuming regulator linearization.

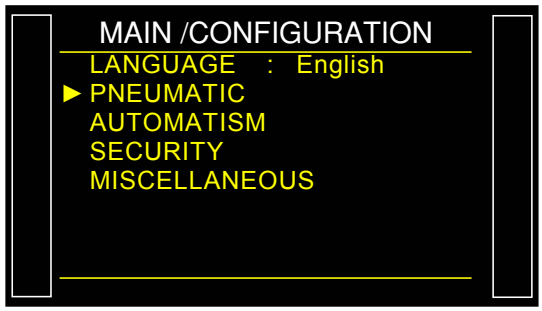
External: Await a reset to resume (factory setting).

PERMANENT REGULATOR

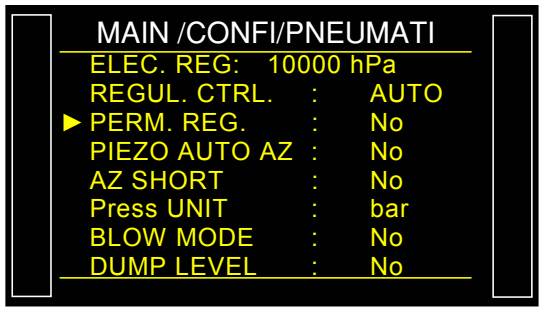
When an electronic regulator is used with a test part with a small volume and requiring a fast cycle time this function should be activated. The instrument will regulate the air pressure to the set fill value for the entire test sequence including the time between tests.

1. PROCEDURE

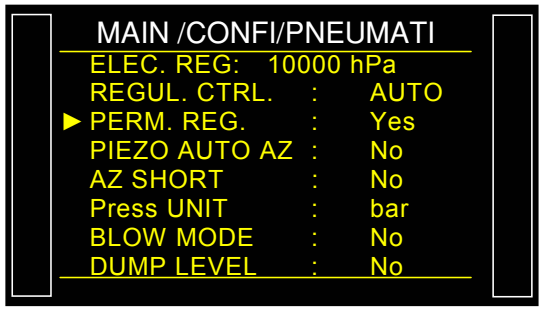
From the "**CONFIGURATION**" menu, select the "**PNEUMATIC**" menu and then press the OK button.



Then by using the arrows, select the "**PERM REG.**" menu and validate with the OK key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
▶ PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

By using the arrows, select "**Yes**" and validate with the OK key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
▶ PERM. REG. : Yes
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

PIEZO AUTO ZERO

This function is to set the pressure sensor zero and calculate the electronic regulator characteristics. This operation must be carried out regularly.

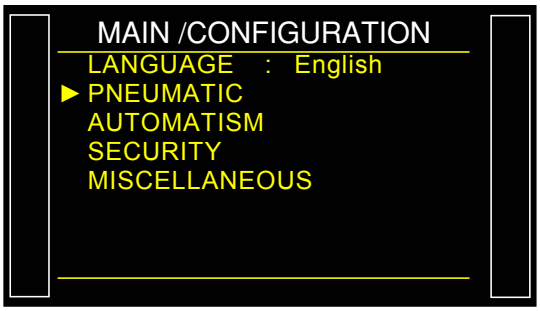
This function enables the setting of a frequency or a number of measurement cycles between two pressure sensor auto zeros. The piezo auto zero function zeroed the instrument pressure sensor to atmospheric pressure.

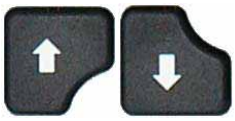
- **Number of minutes**: to set a time frequency between two auto zeros of 1 to 999 minutes. If set to zero, no auto-zero is performed.
- **Number of cycles**: to set a number of cycles between two auto zeros.

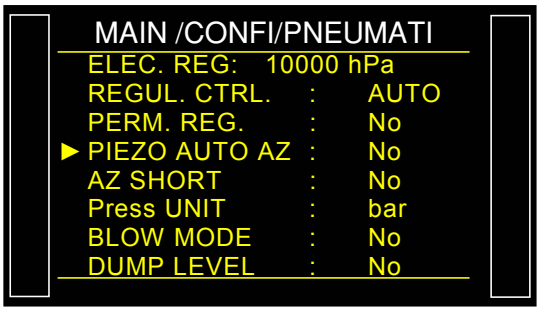
The two options can be set, in this case the first counter to expire will start the auto-zero, both counters will then be reset.

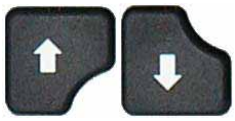
1. PROCEDURE

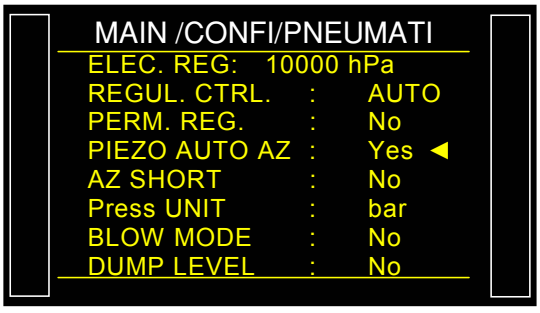
From the "**CONFIGURATION**" menu, select the "**PNEUMATIC**" menu and then press the button.



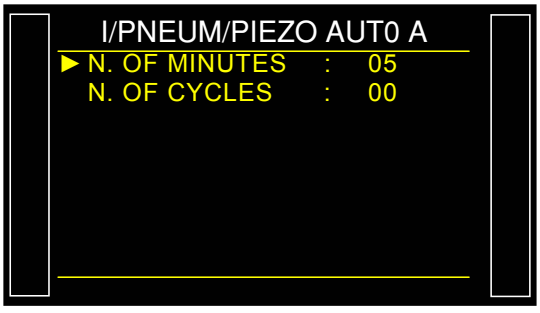
Then by using the  arrows, select the "**PIEZO AUTO AZ**" menu and validate with the key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
▶ PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

By using the  arrows, select "**Yes**" and validate with the key.

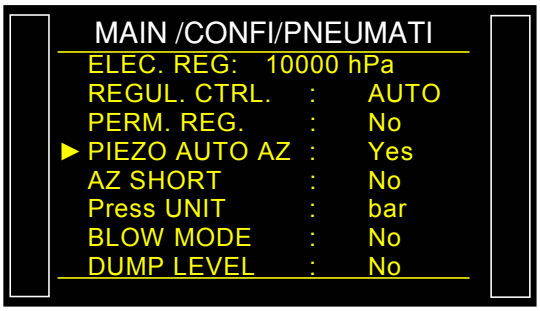

MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : Yes ◄
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

Then select the counter you want: "**N. OF MINUTES**" or "**N. OF CYCLES**" and configure the value.



Then validate with the

key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
▶ PIEZO AUTO AZ : Yes
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

AUTO ZERO SHORT

Each time the instrument performs a pressure sensor (piezzo) auto zero, it also re-linearizes the electronic regulator. The linearization process might be too long for some application. Auto-zero short skips the linearization process and zeros the pressure sensor only.

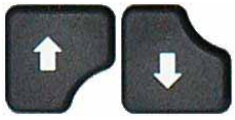
Only the automatics auto-zeros take in account the programmed times.

The auto-zeros perform on demand have the 0.5 seconds time.

1. PROCEDURE

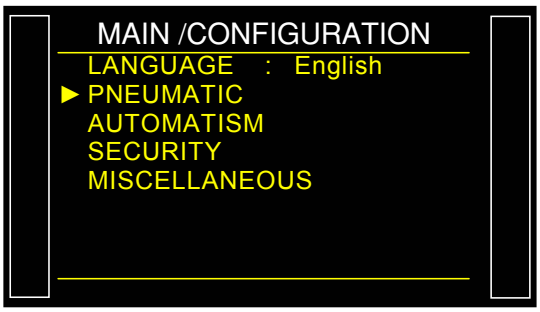
From the "**CONFIGURATION**" menu, select the "**PNEUMATIC**" menu and then press the button.

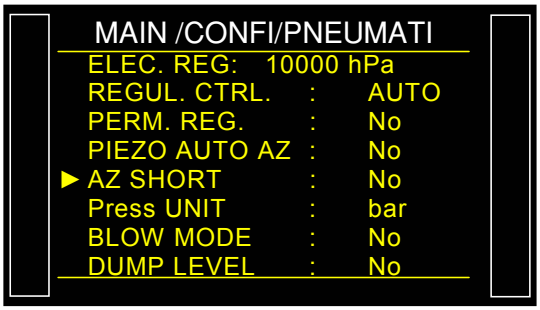
Then by using the arrows, select the "**PIEZO AUTO AZ**" menu and validate with the key.

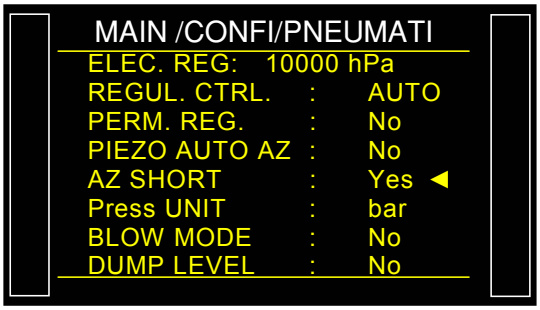


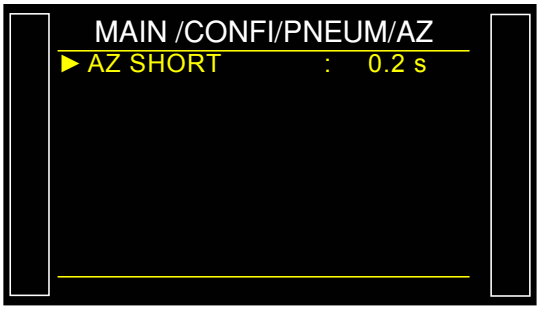
By using the arrows, select "**Yes**" and validate with the key.

Then configure the **AZ short** time.

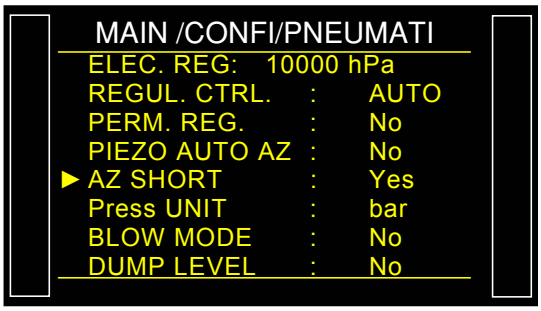



MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
► AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : Yes ◄
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No



Then validate by pressing the OK key.

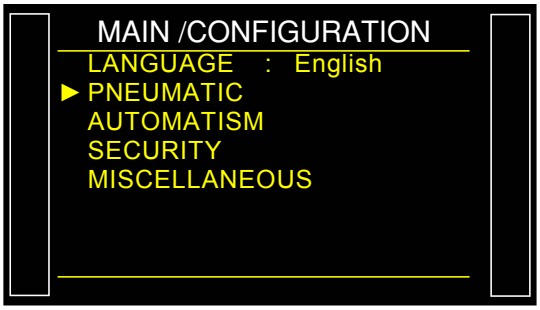

MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
► AZ SHORT : Yes
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

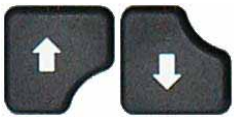
DUMP LEVEL

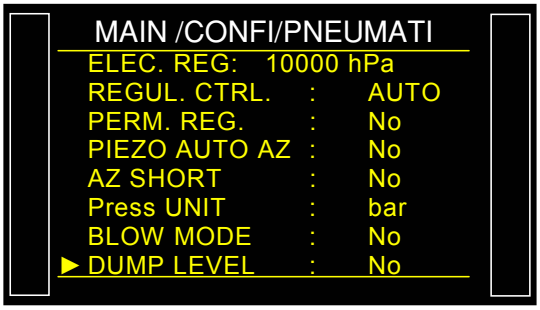
The function **DUMP LEVEL** monitors the pressure inside the part and warns the user with the message "**PART UNDER PRESSURE**". The end of cycle signal after the dump time doesn't goes high until the pressure of the tested is below the level entered into the function configuration.

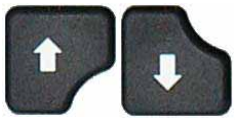
1. PROCEDURE

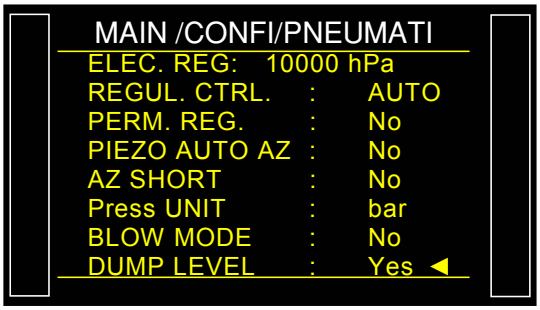
From the "**CONFIGURATION**" menu, select the "**PNEUMATIC**" menu and then press the button.



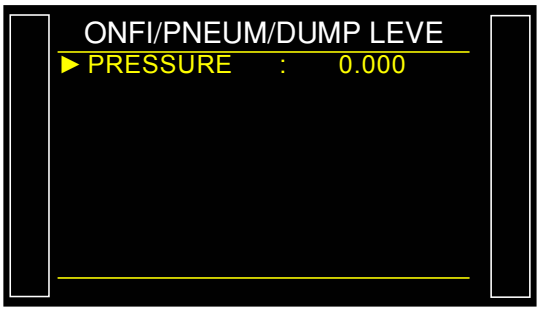
Then by using the  arrows, select the "**DUMP LEVEL**" menu and validate with the key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
▶ DUMP LEVEL : No

By using the  arrows, select "**Yes**" and validate with the key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : Yes ◀

Then configure the minimum dump level pressure.



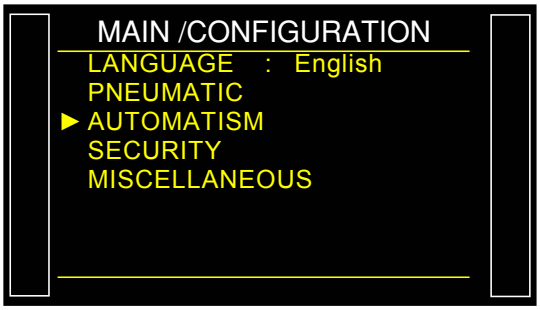
RS232

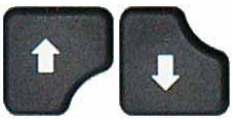
The "**RS232**" configures the RS232 link parameters. The **RS232** can be connected to a printer or a computer for data collection.

1. PROCEDURE

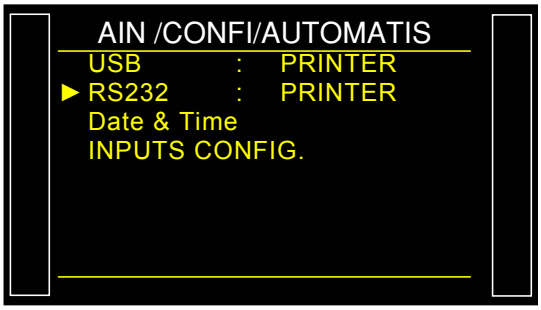
From the "**CONFIGURATION**" menu, select the "**AUTOMATISM**" menu and then press the

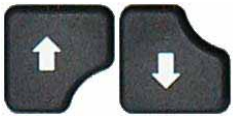
button



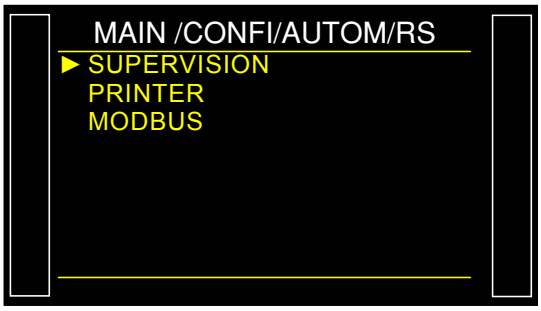
By using the  arrows, select the "**RS232**" menu and validate with the

key.



Then by ising the  arrows select the "**PRINTER**" menu, and then validate with the

key.



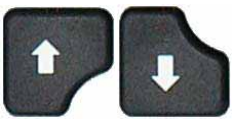
Supervision : the device switches automatically in this mode when it is under external program control, example : Winateq.

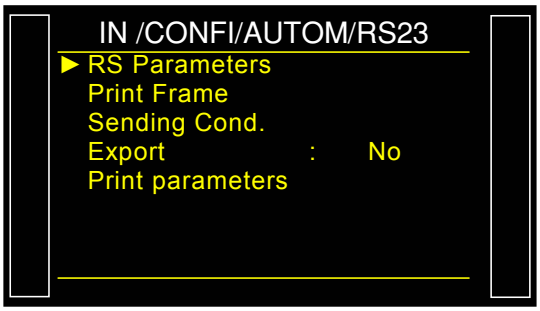
Printer: (factory default) standard RS232 protocol to print (or send the frame) the program parameters as well as test results. When the option is activated, the RS232 broadcast the test results after each cycle.

Modbus: Configure the Modbus link (option) if installed. The frames parameters, RS parameters (speed, serial port) have to be set.

1.1. PRINTER MODE

The configuration menu of the link **PRINTER** is displayed.

By using the  arrows, select the menu to configure and validate with the key.

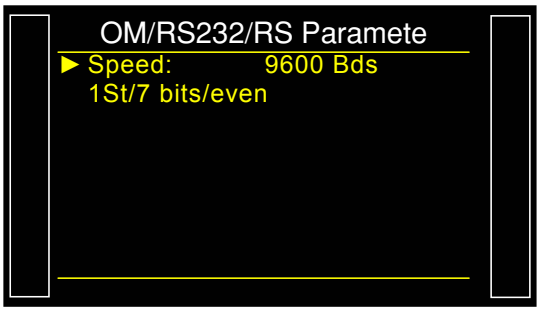


RS parameters: to configure the device for dialog with the printer.

Transmit speed parameter.

Stop bit, number of bits and parity parameters.

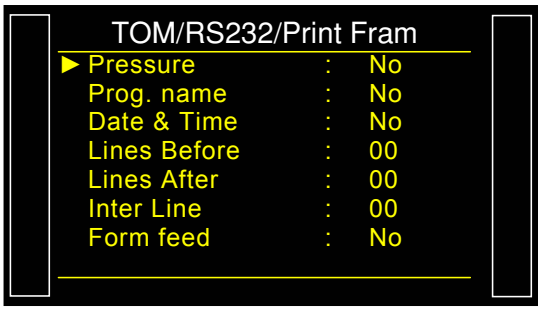
These parameters must be the same as the receiver device.



Print frame: This function enables the configuration of the result printout.

Associated parameters to be set:

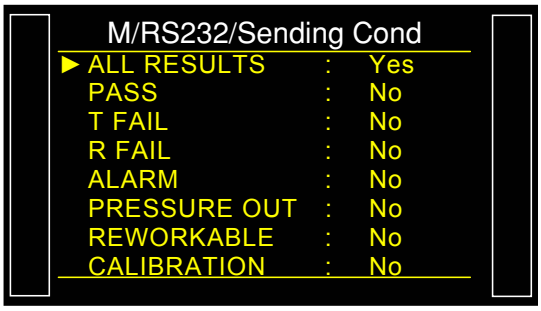
- **PRESSURE** (Display test pressure),
- **Prog. Name** (Display program name when set),
- **Date & Time** (printing date and time),
- **Lines before** (nb of lines before result),
- **Lines after** (nb of lines after result),
- **Inter line** (space between each line),
- **Form feed** (new page).



Sending conditions: With this function you can choose which data is to be printed on the results sheet.

Associated parameters to be set:

- **ALL RESULTS** (all test results),
- **PASS** (nb of pass parts),
- **T. FAIL** (number of fail test parts),
- **R. FAIL** (nb of fail reference parts),
- **ALARM** (nb of alarm triggered),
- **PRESS OUT** (nb of incorrect pressure),
- **REWORKABLE** (nb of recoverable parts),
- **CALIBRATION**.



1.1.1. Examples of results frames

Frames for LEAK test:

Pass part frame:
<01>:
<01>:30/05/2012 16:52:01
<01>: 487.8 mbar:(OK): 029 Pa

Fail part frame:
<01>:
<01>:30/05/2012 16:53:36
<01>: 493.9 mbar:(DT): 114 Pa

Alarm frame:
<02>:
<02>:30/05/2012 16:55:24
<02>: 486.4 mbar:(AL): >> F.S. TEST

This frame is of the same type as the print parameters frame except that the different character strings follow each other and are separated by a punctuation mark which enables the various boxes to be entered automatically in Microsoft Excel.

This frame is operated by connecting a computer to the instrument's RS 232 link.

Frames for STANDARD SEALED COMPONENTS test:

Pass part frame:
<01>:ABCDEFGHIJKL
<01>:12/04/2013 10:06:10
<01>: 0.997 bar:(PB): 31 Pa

Frames for LARGE LEAK SEALED COMPONENTS test:

Pass part frame:
<01>:ABCDEFGHIJKL
<01>:17/04/2013 15:08:24
<01>:(OK): 0.441 bar

Fail part frame:
<01>:ABCDEFGHIJKL
<01>:12/04/2013 09:48:42
<01>:(AL):SEALED PART VOL TOO SMALL

<01>:ABCDEFGHIJKL
<01>:12/04/2013 09:54:48
<01>:(TD):SEALED PART VOL TOO LARGE

Alarm frame: (learning error) :
<01>:ABCDEFGHIJKL
<01>:12/04/2013 09:21:29
<01>:(AL):SEALED PART LEARN ERROR

Frames for BLOCKAGE test:

Pass part frame P mode:
<03>:P MODE
<03>:02/05/2013 15:17:13
<03>: 0.199 bar:(OK): 0.199 bar

Fail part frame P mode:
<03>:P MODE
<03>:02/05/2013 15:20:07
<03>: 0.110 bar:(TD): 0.110 bar

Frames for DESENSITIZED test:

Pass part frame D mode:

<05>:D MODE
<05>:16/05/2013 12:38:10
<05>: 0.205 bar:(OK):00008 Pa

Fail part frame D mode:

<05>:D MODE
<05>:16/05/2013 12:40:18
<05>: 0.205 bar:(TD):01401 Pa

<05>:D MODE
<05>:16/05/2013 12:40:59
<05>: 0.204 bar:(RD):-1721 Pa

Alarm frame:

<05>:D MODE
<05>:17/05/2013 13:03:03
<05>: 0.205 bar:(TD):LARGE LEAK TEST

<05>:D MODE
<05>:17/05/2013 12:33:53
<05>: 0.181 bar:(AL):PRESSURE HIGH

<05>:D MODE
<05>:17/05/2013 12:40:08
<05>: 0.204 bar:(AL):PRESSURE LOW

Frames for OPERATOR test:

Pass part frame:

<07>:OPERATEUR
<07>:05/07/2013 05:20:29
<07>:(OK)

Fail part frame:

<07>:OPERATEUR
<07>:05/07/2013 05:20:42
<07>:(TD)

Frames for VOLUME MEASURE test:

Pass part frame:

<03>:VOL
<03>:09/08/2013 12:05:08
<03>: 0.037 bar:(OK): 776.0 ml

Fail part frame:

<03>:VOL
<03>:08/08/2013 08:44:58
<03>: 0.037 bar:(TD): 780.1 cm3

<03>:VOL
<03>:08/08/2013 08:46:41
<03>: 0.037 bar:(RD): 780.1 cm3

Alarm frame:

<03>:VOL
<03>:08/08/2013 08:52:59
<03>: 0.551 bar:(AL):PRESSURE HIGH

<03>:VOL
<03>:09/08/2013 12:00:41
<03>: 0.600 bar:(AL):PRESSURE LOW

Frames for BURST TEST:

Pass part frame:

<04>:BURST
<04>:25/09/2013 01:06:02
<04>: 0.595 bar:(OK):

Fail part frame:

<04>:BURST
<04>:25/09/2013 01:29:31
<04>: 0.448 bar:(DT):BURST

Alarm frame:

<04>:BURST
<04>:25/09/2013 01:27:46
<04>: 0.221 bar:(AL):BURST < Pmin

<04>:BURST
<04>:25/09/2013 01:30:36
<04>: 0.582 bar:(AL):PRESSURE HIGH

Burst frame = OK :

<06>:14/02/2014 10:46:57
<06>: 0.488 bar:(OK):BURST

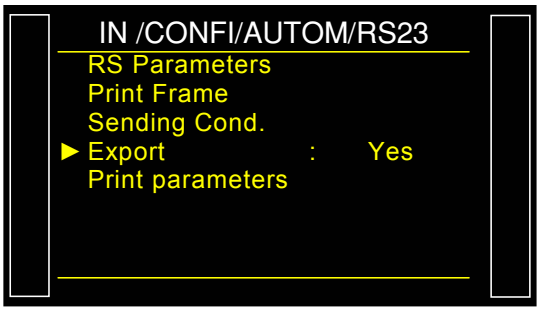
<06>:14/02/2014 10:45:39
<06>: 0.603 bar:(TD):

Toutes les trames sont exploitées en connectant un micro ordinateur sur la ligne RS232 de l'appareil.

1.1.2. Export mode

Export: This function can be used to create and send a special results frame which can be processed by a PC using Microsoft Excel.

The characters and codes are from the ASCII table codes.



Exports examples: (the following example is from a F5 version v1.18p device).

The character "→" represents a tab HT (09h).

The character "□" represents a space (20h).

The character "↵" represents a carriage return CR (0Dh).

Example 1:

- **ASCII**

TEST→01→(OK)→□□000→Pa→□501.8→mbar→→→23/01/2006→17:54:13→↵

- **Hexa**

54 45 53 54 **09** 30 31 **09** 28 4F 4B 29 **09** 20 20 30 30 30 **09** 50 61 **09** 20 35 30 31 2E 38 **09** 6D 62 61 72 **09 09 09** 32 33 2F 30 31 2F 32 30 30 36 **09** 31 37 3A 35 35 3A 31 39 **09** *0D*

- **Detail**

1		2		3		4		5		6		7	8 / 8'	9		10	
TEST	→	01	→	(OK)	→	□□000	→	Pa	→	□501.8	→	mbar	→→→	23/01/2006	→	17:54:13	→↵
54 45 53 54	**09**	30 31	**09**	28 4F 4B 29	**09**	20 20 30 30 30	**09**	50 61	**09**	20 35 30 31 2E 38	**09**	6D 62 61 72	**09 09 09**	32 33 2F 30 31 2F 32 30 30 36	**09**	31 37 3A 35 35 3A 31 39	**09***0D*

Example 2:

- **ASCII**

TEST→01→(AL)→→→□□□0.0→mbar→PRESSURE□LOW→→23/01/2006→18:00:13→↵

- **Hexa**

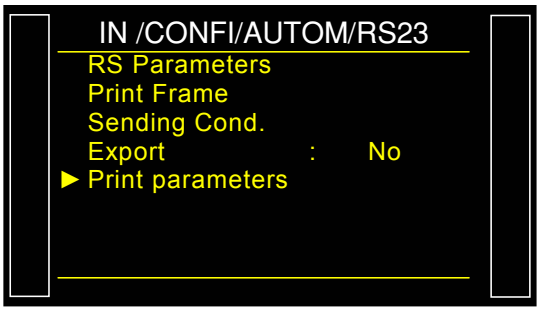
54 45 53 54 **09** 30 31 **09** 28 41 4C 29 **09 09 09** 20 20 20 30 2E 34 **09** 6D 62 61 72 09 50 52 45 53 53 55 52 45 20 4C 4F 57 **09 09** 32 33 2F 30 31 2F 32 30 30 36 **09** 31 38 3A 30 32 3A 31 36 **09** *0D*

- **Detail**

1		2		3		4		5		8	8'	9		10	
TEST	→	01	→	(AL)	→→→	□□□0.0	→	mbar	→	PRESSURE□LOW	→→	23/01/2006	→	18:00:13	→↵
54 45 53 54	**09**	30 31	**09**	28 41 4C 29	**09 09 09**	20 20 20 30 2E 34	**09**	6D 62 61 72	**09**	50 52 45 53 53 55 52 45 20 4C 4F 57	**09 09**	32 33 2F 30 31 2F 32 30 30 36	**09**	31 38 3A 30 32 3A 31 36	**09***0D*

1.1.3. Print parameters

Print parameters: by pressing this button, the program test parameters are printed or sent immediately.



Columns detail:

1) Personalization
2) Program Number
3) Test result message.
4) Numerical Test Value.
5) Test unit.
6) Numerical pressure value.
7) Pressure Unit.
8) Alarm Message.

8') Bar Code (option: depends of the device version).

9) Date.
10) Time.

Example of print parameters frame:

Version 03.10i
27/07/2012 15:26:14

Pr 01

TYPE : LEAK TEST
COUPL. A : 0.0 s
FILL TIME : 2.0 s
STAB TIME : 5.0 s
TEST TIME : 1.0 s
DUMP TIME : 0.0 s
Max FILL : 960.0
Min FILL : 600.0
Set FILL : 800.0
Test FAIL : 000
Ref. FAIL : 000

Pr 02

TYPE : LEAK TEST
COUPL. A : 0.0 s
FILL TIME : 5.0 s
STAB TIME : 4.0 s
TEST TIME : 4.0 s
DUMP TIME : 0.0 s
Max FILL : 600.0
Min FILL : 400.0
Set FILL : 500.0
Test FAIL : 100
Ref. FAIL : 000

SECURITY

This function deactivates the **START** key on the instrument front panel. Programs can only be started from the instrument relay board (I/O connector).

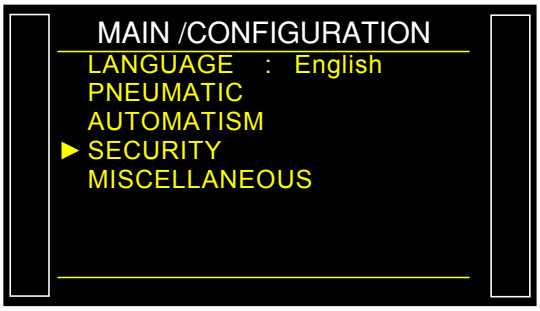
The "**SECURITY**" menu has two functions:

- The first selects the lock mode for parameters access,
- the second deactivates the **START** key on the instrument front panel. Programs can only be started from the instrument relay board (I/O connector).

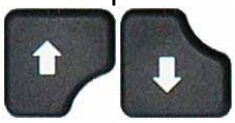
1. PROCEDURE

From the "**CONFIGURATION**" menu, select the "**SECURITY**" menu and then press the

button.

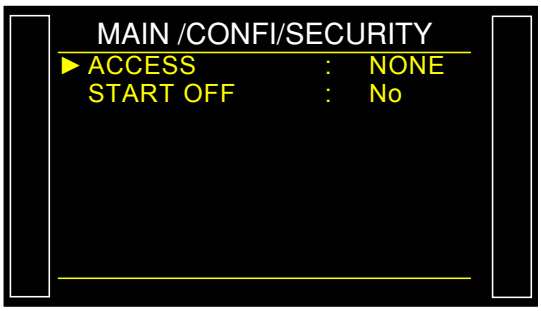


For the parameters access mode, by using the

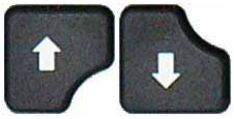


arrows, select the "**ACCESS**" menu and then validate by pressing

.



Then by using the



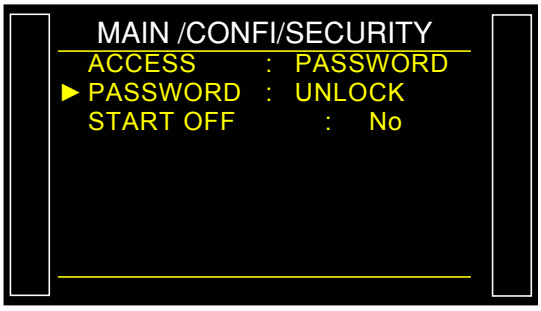
arrows select the mode among:

- **NONE** : no access limitation.
- **USB** : insert an USB stick with the rights (a key.bin file is available in the CDROM).
- **PASSWORD** : a password is required.

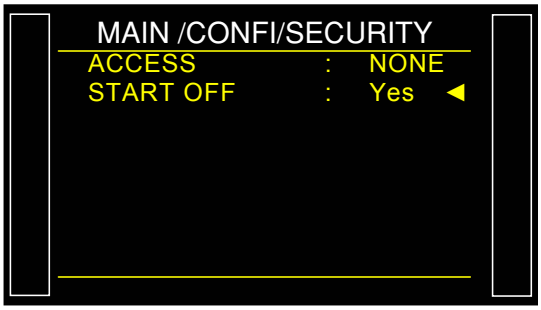
When the **PASSWORD** mode is selected, a additional unlock menu appears, this menu allows to validate the lock function with the password and set it.

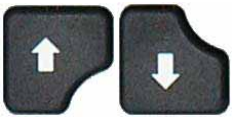
Follow instructions gives by the device.

***Note**: in case of **PASSWORD** mode choice, the parameters access with an **USB** stick (see above) runs too.*



For the "**START OFF**" menu, by using the arrows, select the "**START OFF**" menu and validate with the key.



By using the  arrows, select "**Yes**" and validate with the key.

I/O CONFIGURATION

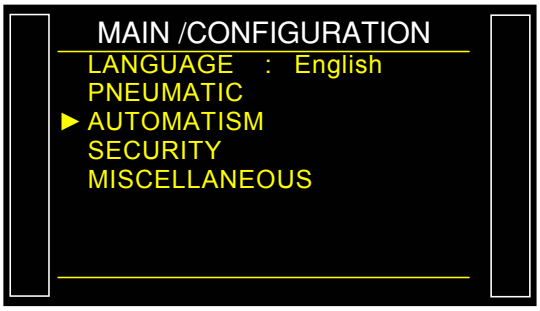
This menu configures the programmable inputs on the I/O connector as well as the output mode ("**STANDARD**" or "**COMPACT**").

For the operation and use of the valves codes outputs and the auxiliaries 24V, see the sheet #609 "**Valves codes / Auxiliary outputs**"

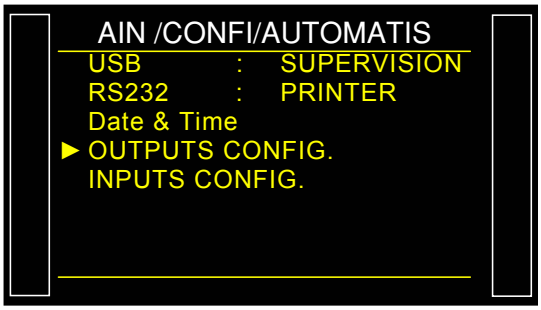
1. OUTPUTS CONFIGURATION

This is to configure the valves codes and auxiliaries' outputs and the modes "**STANDARD**" or "**COMPACT**".

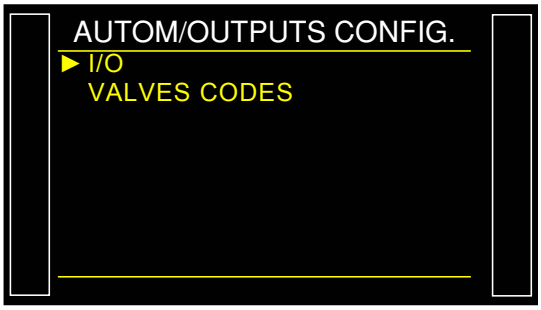
From the "**CONFIGURATION**" menu, select the "**AUTOMATISM**" menu and then press the OK button.



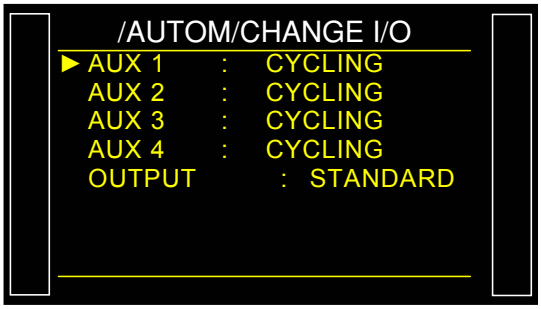
Then by using the arrows, select the "**OUTPUTS CONFIG**" menu and validate with the OK key.



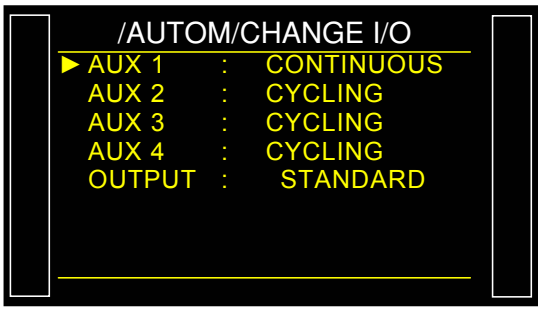
By using the arrows, select the **I/O** menu and validate with the OK key.



By using the arrows, select the input to change and the outputs mode and validate with the OK key.



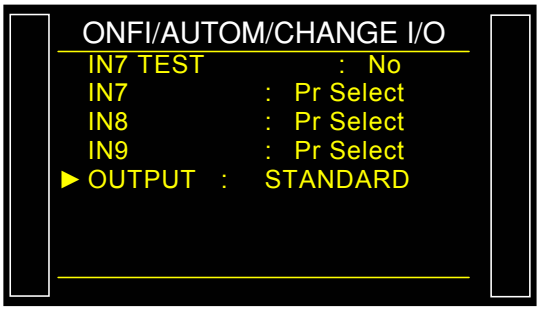
Then by using the arrows, select the hope mode among **CYCLING**, **CONTINUOUS** or **PROGRAM** and validate with the key.



Two output modes are available: **STANDARD** mode and **COMPACT** mode.

STANDARD: this is default the I/O relay board connector configuration.

COMPACT: outputs are available on the I/O relay board connector for the results of two chained cycles. Outputs 1 and 2 are reserved for the first cycle, outputs 3 and 4 for the second cycle, output 5 for the end of the chained cycles.



For the outputs connecting, see the sheets "**Electrics connectors**", 692/1 for the F610, 692/2 for the F620 and 692/7 for the F670.

Do the same for the others outputs codes.

2. INPUTS CONFIGURATION

This menu is used to give a special function to the inputs 7, 8 or 9 on the connector, of the Inputs/Outputs16 programs relay board, see the sheets "**Electrics connectors**", 692/1 for the F610, 692/2 for the F620 and 692/7 for the F670.

The various functions available on inputs are:

- **Program selection**,
- **Synchro test.**

The different existing special cycles which appear in regard of the validated functions, examples:

- **Regulator adjust**,
- **Infinite fill**,
- **Piezo auto zero**,
- **ATR learning cycle**,
- **Volume compute**,
- **Customer Unit Learning**,
- **Check Customer Unit Learning**,
- **Check test result**,
- **Sealed Pass part learn**,
- **Sealed Fail part learn**.

As well as the special maintenance cycles if that function is validated:

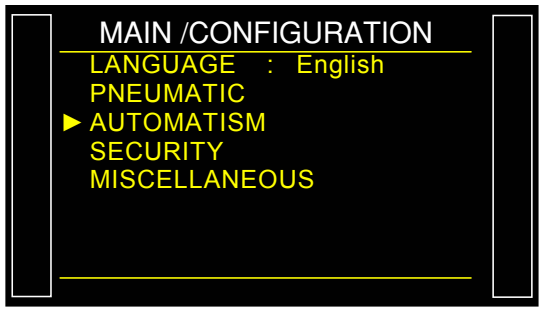
- **Regulator 1 adjust**,
- **Regulator 2 adjust**,
- **Leak sensor check**,
- **Valve Auto-test**,
- **Sensor status**.

These functions are all the special cycles available in the instrument.

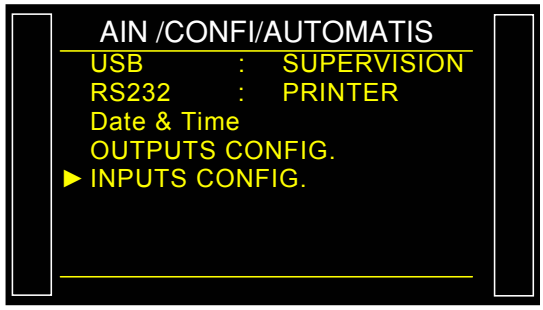
6 additional inputs are available on the "Outputs codes" board. These inputs are the same as the board shows above, only the program selection is not available.

2.1. PROCESS

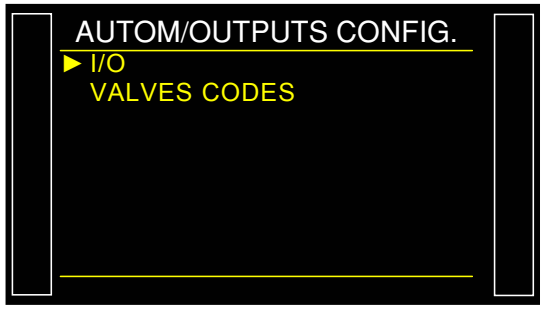
From the "**CONFIGURATION**" menu, select the "**AUTOMATISM**" menu and then press the OK button.



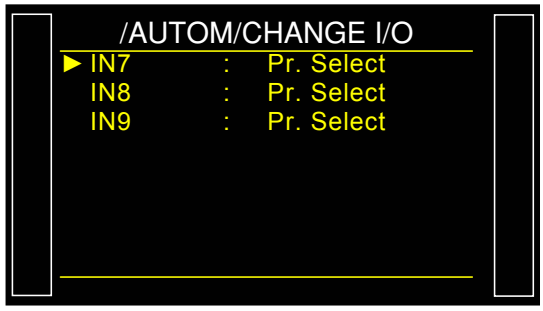
Then by using the arrows, select the "**INPUTS CONFIG**" menu and validate with the OK key.



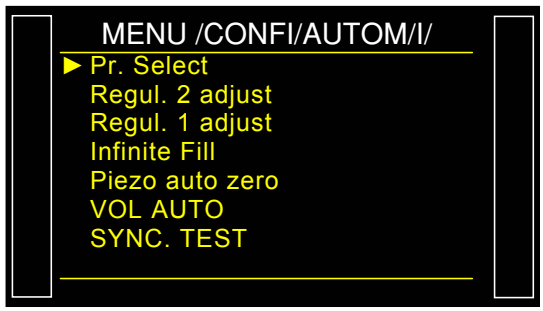
By using the arrows, select the **I/O** menu and validate with the OK key.



By using the arrows, select the input to change and the outputs mode and validate with the OK key.



By using the arrows, select the function to assign to the input and validate with the OK key.



Do the same for the others inputs codes.

***Note**: the program selection is not possible with the valves codes.*

EXTERNAL DUMP (OPTIONAL)

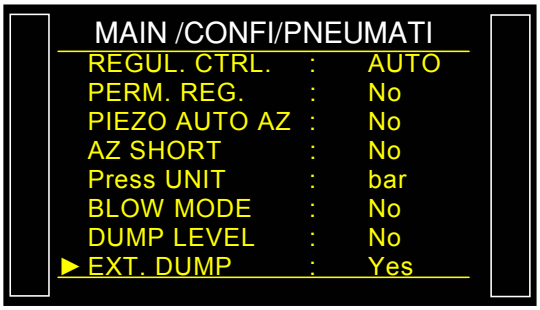
The external dump has the advantage to prevent impurities, liquid or any other particles to be vented through the instrument's internal valve and therefore protects it.

This option activates the pilot of an external dump valve (such as ATEQ leak tight 3/2 valve).

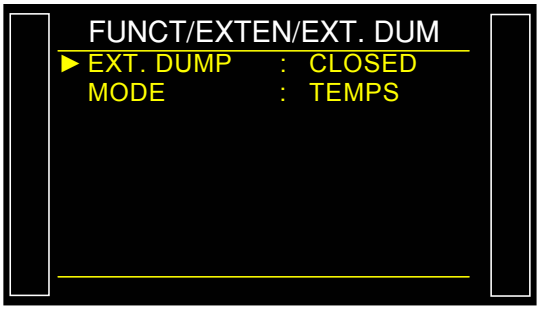
This option requires an external electrical or pneumatic pilot (contact ATEQ to add the option). If the instrument is equipped with this option, one of the internal and external valve codes or one of the auto connector will be occupied.

1. PROCEDURE

In the functions menu, validate with "**Yes**" the "**Ext. Dump**" function.


MAIN /CONFI/PNEUMATI
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No
► EXT. DUMP : Yes

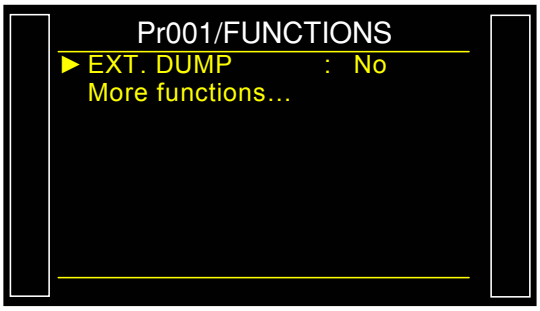
The menu for the configuration of the external dump mode is displayed, normally **CLOSED** or normally **OPEN** and the running mode **TIME** or **CONTINUOUS**.

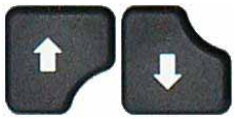


Check the function.

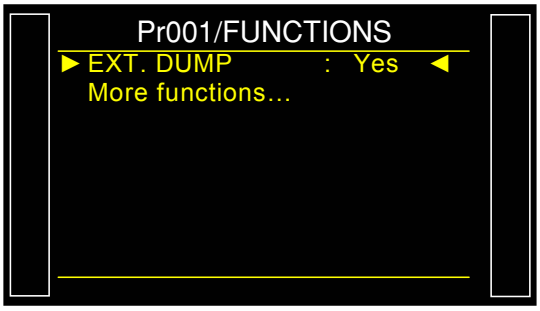
Press the

key the cursor slide to the right hand.



By using the  arrows, select "**Yes**" and validate with the

key. The external dump can perform.



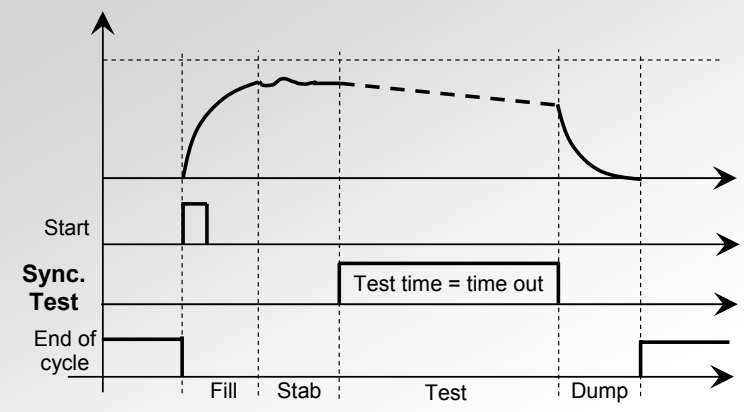
SYNCHRO TEST

The "**SYNCHRO TEST**" (Synchronization test) function leave the choice to the user to go to the test step, using the input configured for this function. This function is only available on the leak test.

Cycle chart:

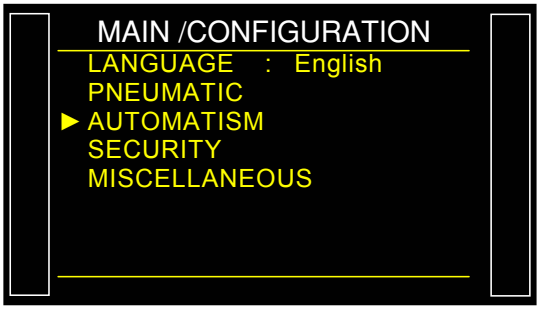
The jumps from "**Stabilization**" to "**Test**" and "**Test**" to "**Dump**" are validated by the input 7; the test time will be done by the user or the PLC.

If a test time is programmed, this will force the end of cycle if the synchronization signal won't be down before the end of the test time (test time = time out).

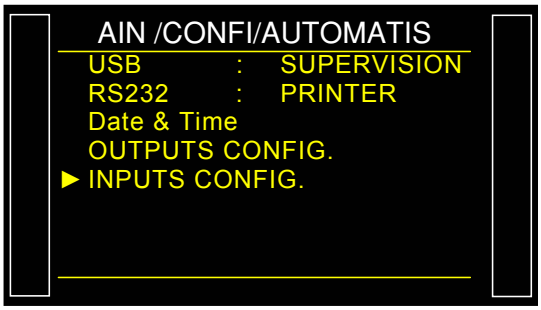


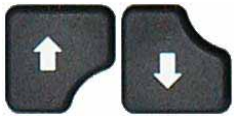
1. PROCEDURE

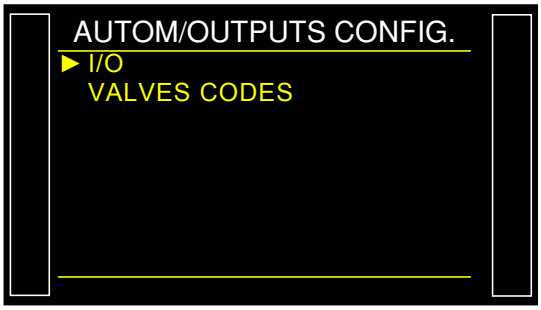
From the "**CONFIGURATION**" menu, select the "**AUTOMATISM**" menu and then press the button.

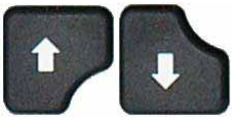


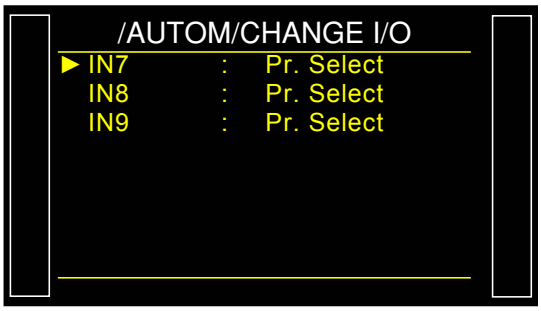
Then by using the arrows, select the "**INPUTS CONFIG**" menu and validate with the key.

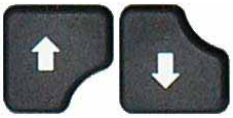


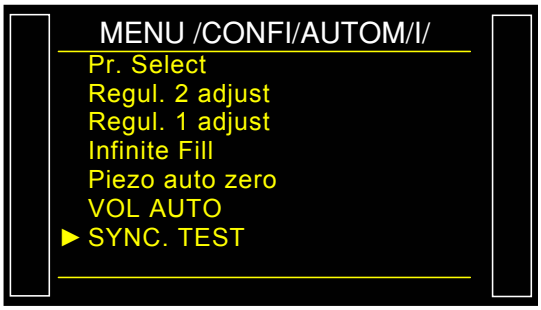
By using the  arrows, select the **I/O** menu and validate with the key.



By using the  arrows, select the input to change and the outputs mode and validate with the key.



By using the  arrows, select the function to assign to the input and validate with the key.

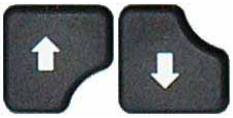


VALVE SERVICE (COUNTERS)

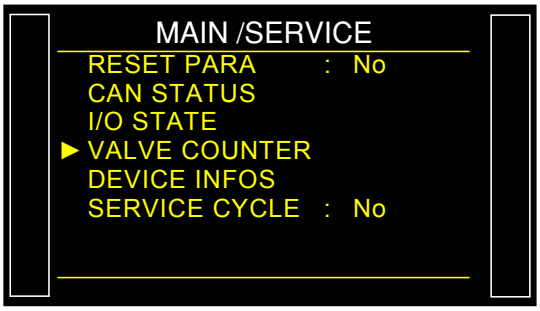
This menu gives the approximate state of the internal valves with the **counters** indications.

1. PROCEDURE

From the "**SERVICE**" menu, select the "**VALVE COUNTER**" menu by using the



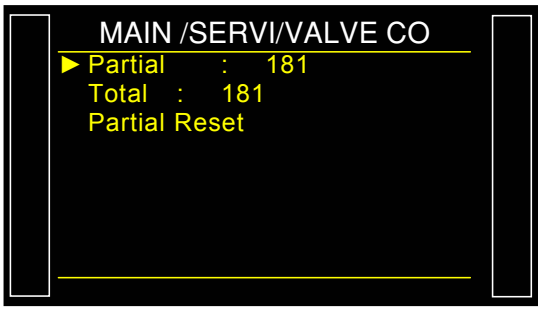
arrows.

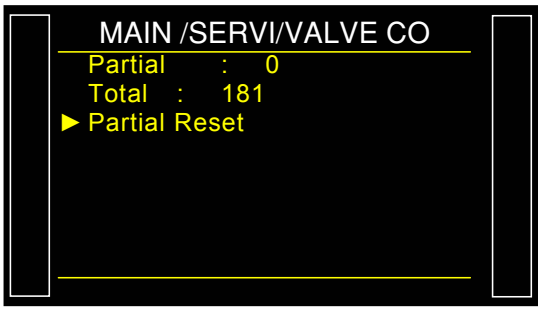


Two valve counters are displayed: **Total** and **Partial**.

Partial: total number of cycles the valve has performed since the last counter reset. This counter can be reset by the user

Total: total number of cycles the valve has performed. This counter is managed by **ATEQ** Company; it is reset once a complete service is carried out on the valves.





Partial Reset: to reset the partial counter.

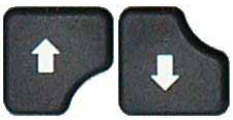
I/O

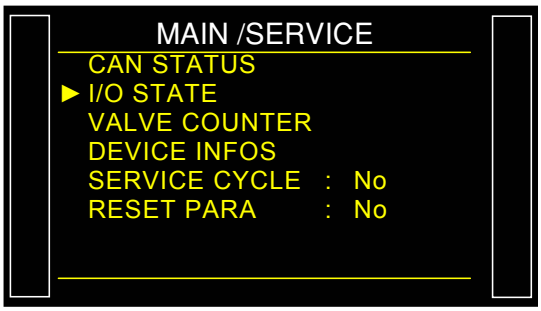
***Important**: we draw your attention to the fact that it is dangerous to change the output status, they can manipulate power actuators or material risks, mechanical, pneumatic, hydraulic, electrical or other which can cause serious personal injury and damage to property.*

This menu is to check the states of each input and output of all the boards built in the device.

1	Activated input or output.
0	No activated input or output.

1. PROCEDURE

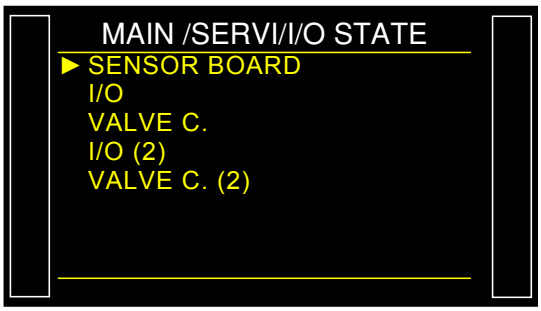
From the "**SERVICE**" menu, select the "**I/O STATE**" menu by using the  arrows.



Sensor : sensor board inputs / outputs.

I/O : Relay board inputs / outputs.

C. Vanne : Valve codes board inputs / outputs.



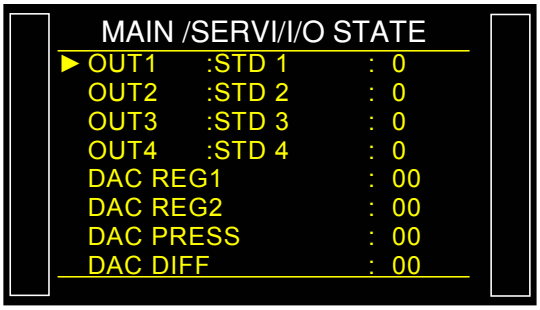
SENSOR BOARD menu, input/outputs list.

OUT1 - OUT4: 24V command internal valve.

DAC REG1 and **2**: configure a value from **0%** to **100%** then validate with the key.

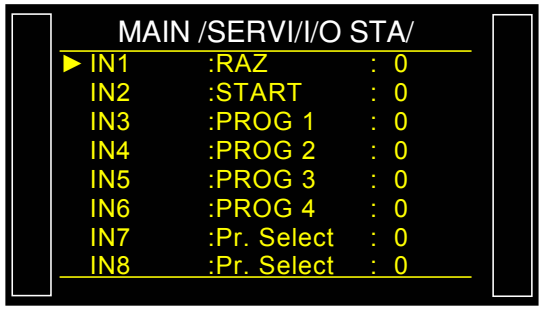
This is an instruction sent to the electronic regulators.

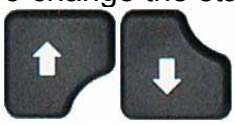
DAC PRESS and **DAC DIFF**:

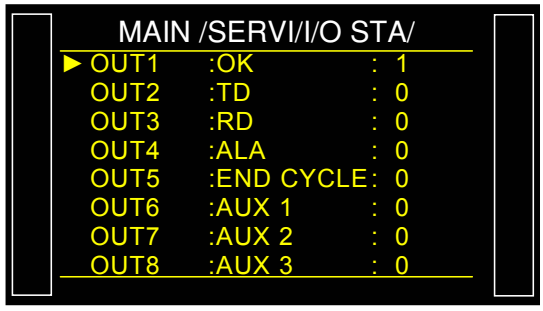


I/O Menu: Inputs / Outputs list.

- IN1 : RESET
- IN2 : START
- IN3 : PROG 1
- IN4 : PROG 2
- IN5 : PROG 3
- IN6 : PROG 4
- IN7 : Pr Select
- IN8 : Pr Select
- IN9 : Pr Select
- OUT1 : PP
- OUT2 : TD
- OUT3 : RD
- OUT4 : ALA
- OUT5 : END CYCLE
- OUT6 : AUX 1
- OUT7 : AUX 2
- OUT8 : AUX 3
- OUT9 : AUX 4

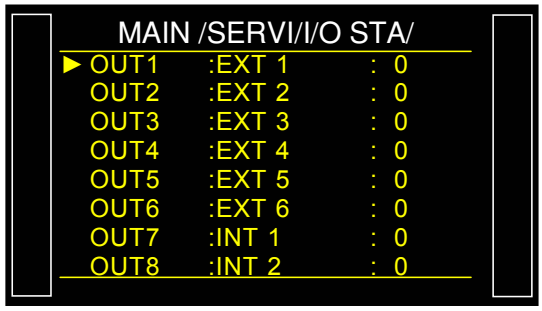


To change the state of an output, by using the  arrows select the output to activate and then press the key.

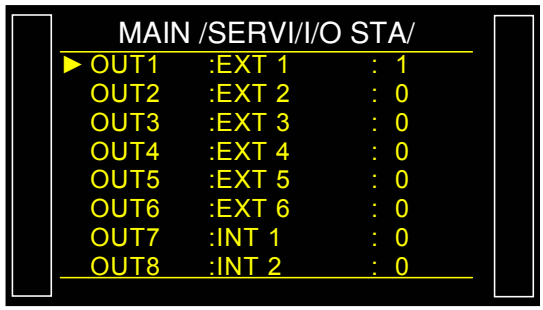


VALVE C. Menu: Inputs / Outputs list.

- OUT1 : EXT 1
- OUT2 : EXT 2
- OUT3 : EXT 3
- OUT4 : EXT 4
- OUT5 : EXT 5
- OUT6 : EXT 6
- OUT7 : INT 1
- OUT8 : INT 2
- IN1 : Inactive
- IN2 : Inactive
- IN3 : Inactive
- IN4 : Inactive
- IN5 : Inactive
- IN6 : Inactive



To change the state of an output, by using the arrows select the output to activate and then press the key.

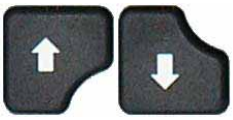


SYSTEM INFORMATION

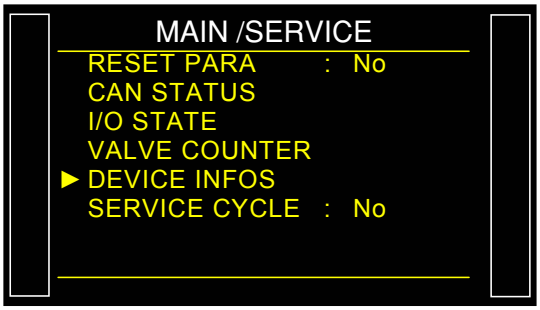
This menu displays information regarding software versions and other useful instrument specific data.

1. PROCEDURE

From the "**SERVICE**" menu, select the "**DEVICE INFOS**" menu by using the

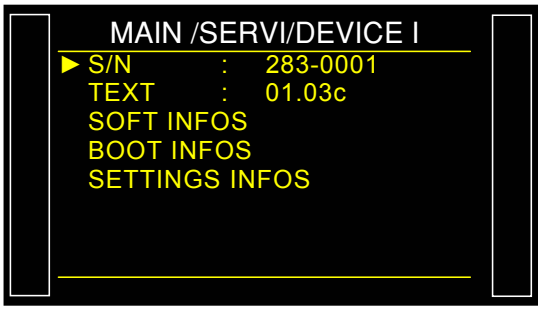


arrows.

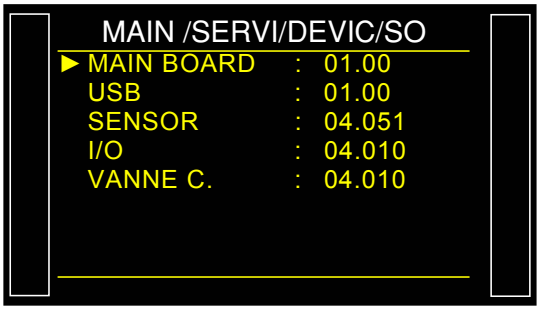


Menu for the selection of the information display:

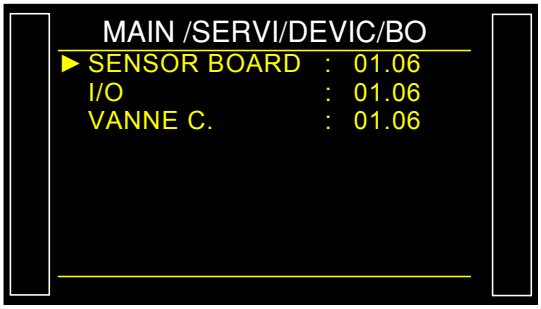
The two first lines gives the serial nulber and the database version of the device texts.



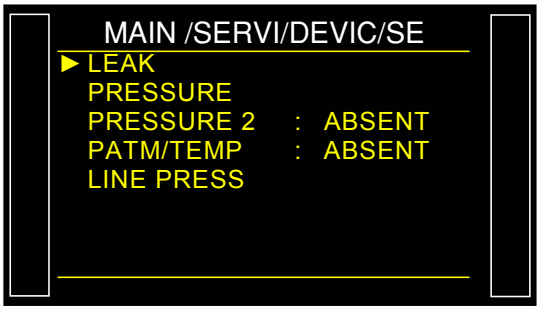
Soft Infos: this menu displays the versions of the software's installed in each component.



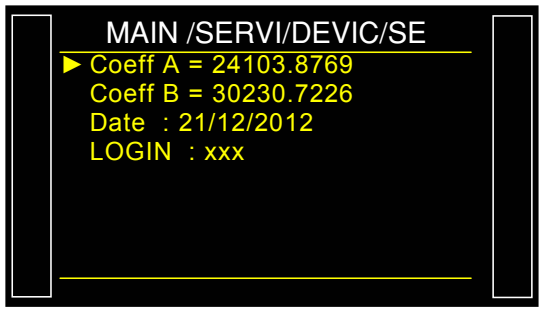
Boot Infos: this menu displays the version of the boot software of each components.



Settings Infos: this menu display the components built in the device.



By pressing on the OK key of each built in component, the adjustment coefficients of the sensors are displayed. This information is useful only for the **ATEQ** Company services.



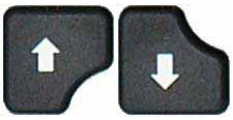
The calibration dates are displayed to inform the customer.

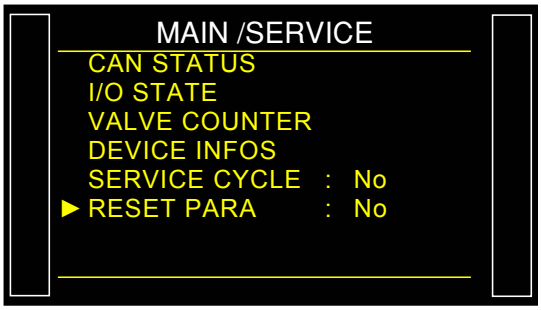
We strongly recommend to send the instrument back to ATEQ once a year for re-calibration

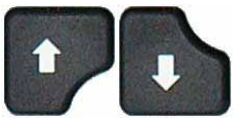
RESET PARAMETERS

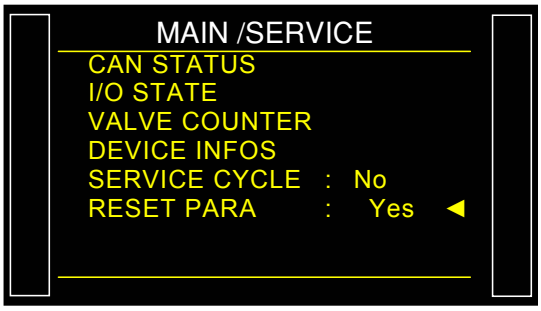
This menu allows the user to perform a complete reset of the software or the channel (reset to factory configuration).

1. PROCEDURE

From the "**SERVICE**" menu, select the "**RESET PARA**" menu by using the  arrows.

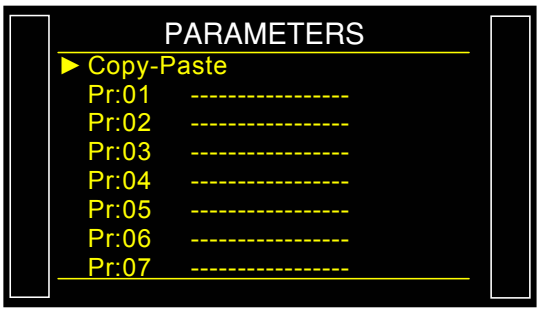


By using the  arrows, validate by "**Yes**" the function and validate with the key.



The device confirms the deletion of all the parameters of the programs.

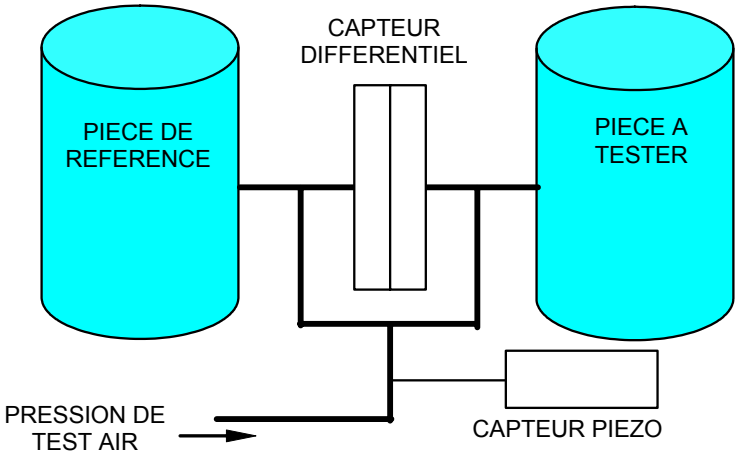
The programs are empty.



DEFINITION, CHARACTERISTICS AND MEASUREMENT PRINCIPLES

1. DEFINITION OF THE ATEQ 6TH SERIES

The **ATEQ 6th series** is a state of the art touch color screen compact air/air leak detectors designed to test the air-tightness of parts on production lines. It is specially adapted for automatic and semi-automatic workbenches. The method used is based on the measurement of a small variation or drop in differential pressure between the test and reference parts, when both are filled to an identical pressure.



2. MEASUREMENT CHARACTERISTICS

2.1. PRESSURE DROP MEASUREMENT

RANGE	ACCURACY	maximum RESOLUTION
0 – 500 Pa	2.5% of the pressure +/- 1 Pa	0.1 Pa

2.2. TEST PRESSURE MEASUREMENT

RANGE	ACCURACY	maximum RESOLUTION
F.S. = 200 mbar	+/- (1.5% of the pressure + 0.2 hPa)	0.1 % FS
0.2 < F.S. ≤ 5 bar	+/- (1.5% of the pressure + 7.5 hPa)	0.1 % FS
5 < F.S. ≤ 10 bar	+/- (1.5% of the pressure + 15 hPa)	0.1 % FS

2.3. MECHANICAL PRESSURE REGULATION

Mechanical regulation	Electronic regulation	
80 kPa to - 2 kPa.	- 80 kPa to - 2 kPa.	50 kPa to 500 kPa.
0,5 kPa to 14 kPa.	1 kPa to 20 kPa.	100 kPa to 1000 kPa
5 kPa to 50 kPa.	2 kPa to 50 kPa.	- 100 kPa to + 100 kPa.
20 kPa to 400 kPa.	10 kPa to 100 kPa.	- 100 kPa to + 400 kPa.
50 kPa to 900 kPa.	20 kPa to 200 kPa.	- 100 kPa to + 1000 kPa.

For other pressure ranges please contact ATEQ.

3. THE DIFFERENT TESTS

3.1. LEAK TEST

The leak test is most suitable for measuring small leaks (pressure drop). The following formula is used to convert a leak expressed in units of flow to a drop in pressure:

$$\Delta P\ (Pa/s) = \frac{F\ (cm^3/min)}{0{,}0006 \times V\ (cm^3)}$$

$F(cm^3/min)$ = leak flow

$V\ (cm^3)$ = volume of the test part

$\Delta P\ (Pa/s)$ = pressure drop

Example:

Part which has dP/dt = 50 Pa/s			Part which has dP/dt = 1 Pa/s		
Test	Pa/s	Pa	Test	Pa/s	Pa
1 s	50	50	1 s	1	1
2 s	50	100	2 s	1	2
3 s	50	150	3 s	1	3
.	.	.	.	.	.
.	.	.	.	.	.
n s	50	nx50	n s	1	n

The choice of working in Pa or in Pa/s depends on the application.

In all events, it must not be forgotten that the range of the sensor in Pa or Pa/s is limited to 50, 500 or 5000 Pa depending on the instrument configuration.

3.1.1. The main types of measurement

There are three measurement methods:

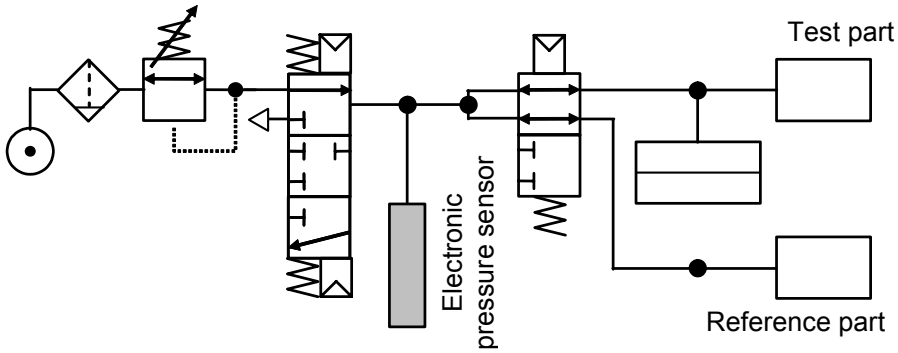
- Direct measurement,
- Indirect measurement,
- Sealed component measurement.

These three principles concern measurements carried out under pressure and under vacuum.

The configuration is determined by the application, and must be determined before ordering the instrument.

3.1.1. 1) Direct or pressure drop measurement

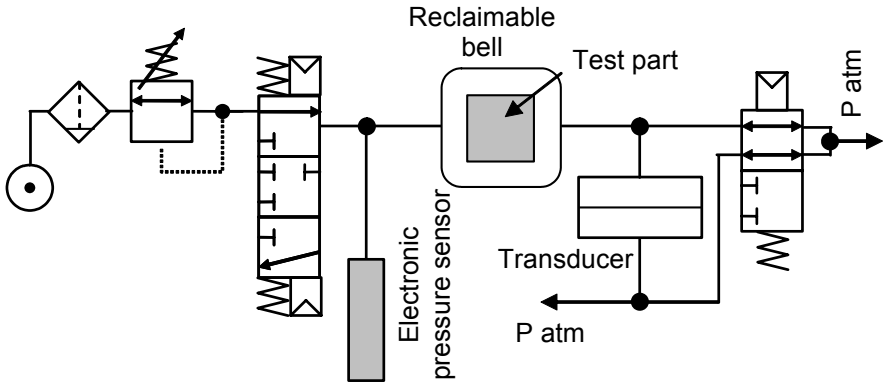
After filling the test and reference parts to the required pressure level, the instrument measures the differential pressure between the two volumes which are separated by the equalization valve.



At the end of a cycle, the instrument empties the components via the dump valve.

3.1.1. 2) Indirect Pressure rise measurement

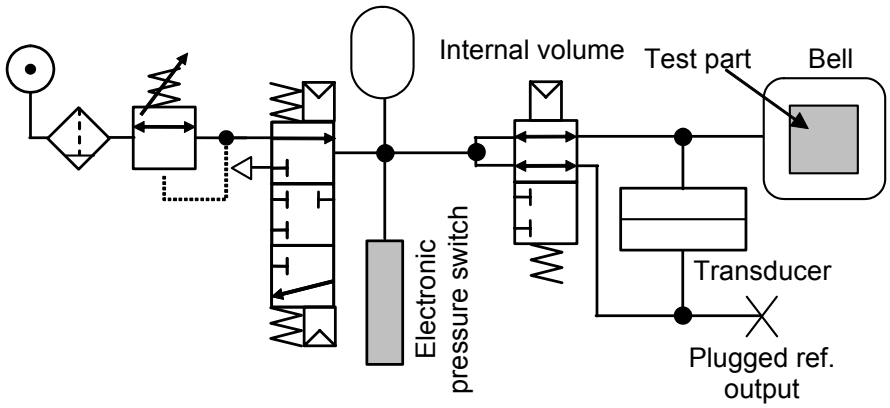
The test part is placed in a sealed bell and the instrument is pneumatically connected to the bell. The part is externally pressurized (with up to 20 MPa or 200 bar) and the bell is lightly pressurized. In the event of a part leakage, the pressure in the bell will rise.



This method allows certain parts to be tested at high pressure levels whilst avoiding the associated constraints. The instrument only tests and measures the pressure in the bell. In the event of a large leak, electronic monitoring of the pressure in the bell will switch the instrument to safety. A security valve must be installed on the bell.

3.1.1. 3) Sealed component measurement

This test is intended for sealed parts which cannot be filled at the test pressure. They are put into the bell. The bell is pressurized by dumping air from an intermediary volume. The difference in the amount of air from a good to bad part can be measured. The pressure in the bell is controlled according to the formula:



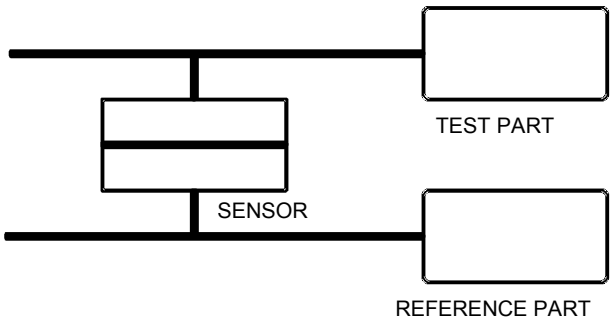
P1 V1 = P2 (V1 + V2) with **V1** bell volume **V2** internal volume

The first and the third measurements may be carried out in comparison with a **reference**, **without reference or in central zero.**

Three kinds of sealed components are available, see sheet #613.

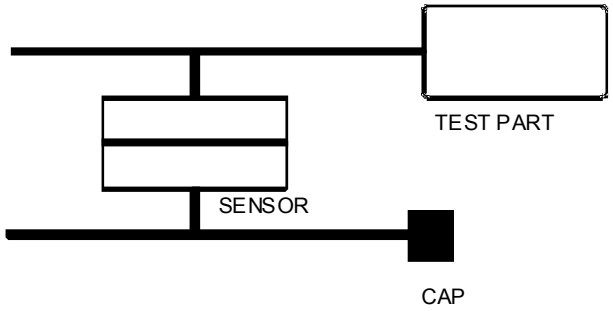
3.1.2. Three types of leak test

3.1.2. 1) Test with reference



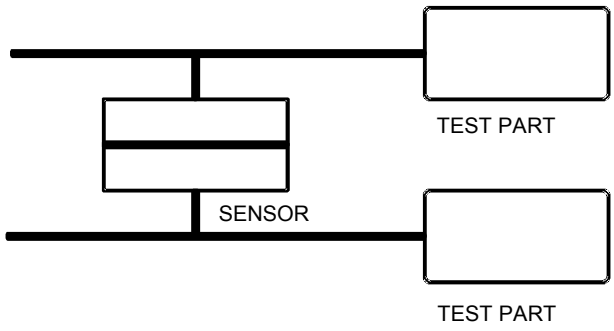
Measurement of a pressure variation between a test part and a reference part. The ideal measurement conditions are: part and reference part identical and identical **ATEQ** connections to both parts (identical lengths, diameters, and type of pipes). A measurement taken with a reference part saves time because the pressure equalization is more rapid. It is valid for parts which cannot be deformed and which mimic thermal and mechanical effects.

3.1.2. 2) Test without reference



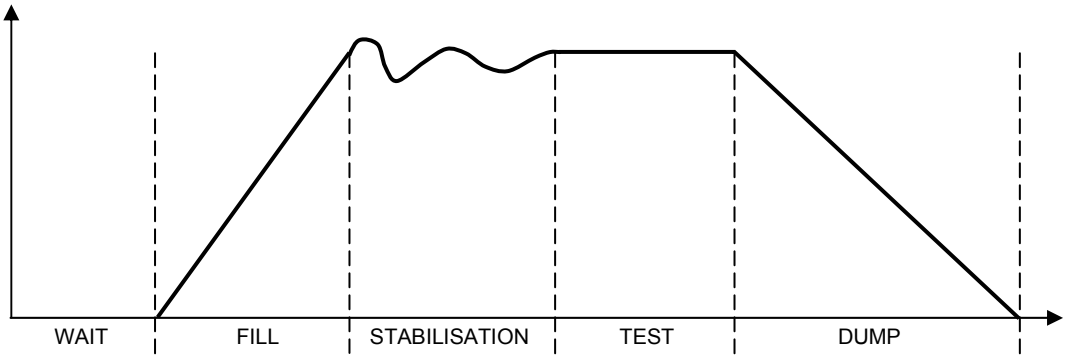
Measurement of a variation in pressure between a test part and a sealing connector on the reference side. A test without reference is not recommended unless parts with very small volumes are being tested. It is preferable always to have a certain volume on the reference side.

3.1.2. 3) Test with central zero



It is possible to test two parts at the same time. One part is connected to the test side and the other to the reference side. The differential sensor measures the drop in pressure in one part in relation to the other. This method may be used when the number of bad parts is very low (generally less than 1%). The probability of having two bad parts at the same time is very low. This method is also used for deformable parts and parts with a constant temperature which is different from the ambient temperature. The central zero tests offer a considerable time gain (two parts tested simultaneously).

3.1.3. Direct pressure measurement



The measurement cycle consists of 5 phases:

	1	2	3	4	5	
Start	**Coupling time** (wait)	**Fill time**	**Stabilization time**	**Test time**	**Dump time**	Cycle end

Start	Cycle start
Coupling time (wait)	The time during which the sealing connections are made to the test parts before they are filled. The instrument may be fitted with the optional automatic connector. This valve is controlled for the duration of the cycle to enable the checking of the installation of the expandable joint connectors.
Fill time	Pressurization of the test and reference parts. At the end of the fill time, the **ATEQ** instrument checks the test pressure against the pressure thresholds. If this is not correct, it will signal a test pressure fault.
Stabilization time	The test and reference parts are completely cut off from the air supply, but are pressurized to the test pressure. Pressure and temperature will then stabilize between the two parts which communicate and act similarly. If the test pressure is incorrect (a large leak on one of the volumes) the test pressure will drop rapidly, the instrument will not move on to the test mode and will indicate a fault.
The **test** time	The test and reference parts are isolated from each other and the leak sensor measures the difference in pressure between them. The signal is electronically assessed and displayed; the part is then diagnosed as good or bad.
The **dump** time	Return of the parts to atmospheric pressure.
End of Cycle	Once the dump has been carried out, the instrument sends the end of cycle signal and the automatic connector valve (optional) is deactivated. This valve can control one or more expandable connectors from the beginning to the end of the cycle.

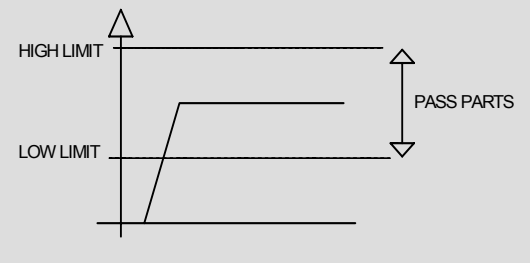
3.2. BLOCKAGE TEST (OPTION)

The blockage mode is used for rough measurement of a flow. The standard pressure limits are used to classify the result as good or bad.

If the pressure measured is below the minimum limit, then the flow is too large.

If the pressure measured is in excess of the maximum limit, then the flow is too small.

The cycle only contains the fill phase and the reading is carried out during this phase.



3.3. DESENSITIZED TEST (OPTION)

This mode is used for the measurement of large leaks, when the reject level required is above the full scale of the differential sensor.

The measurement is performed by the pressure sensor.

***Note**: the calibration mode cannot be used during this mode (CAL/customer mode).*

3.4. OPERATOR TEST

This type of test means that the operator can carry out operations on the part while under test, then to confirm this operation using a **"START"** key if the operator test is good, or **"RESET"** key if the test is fail.

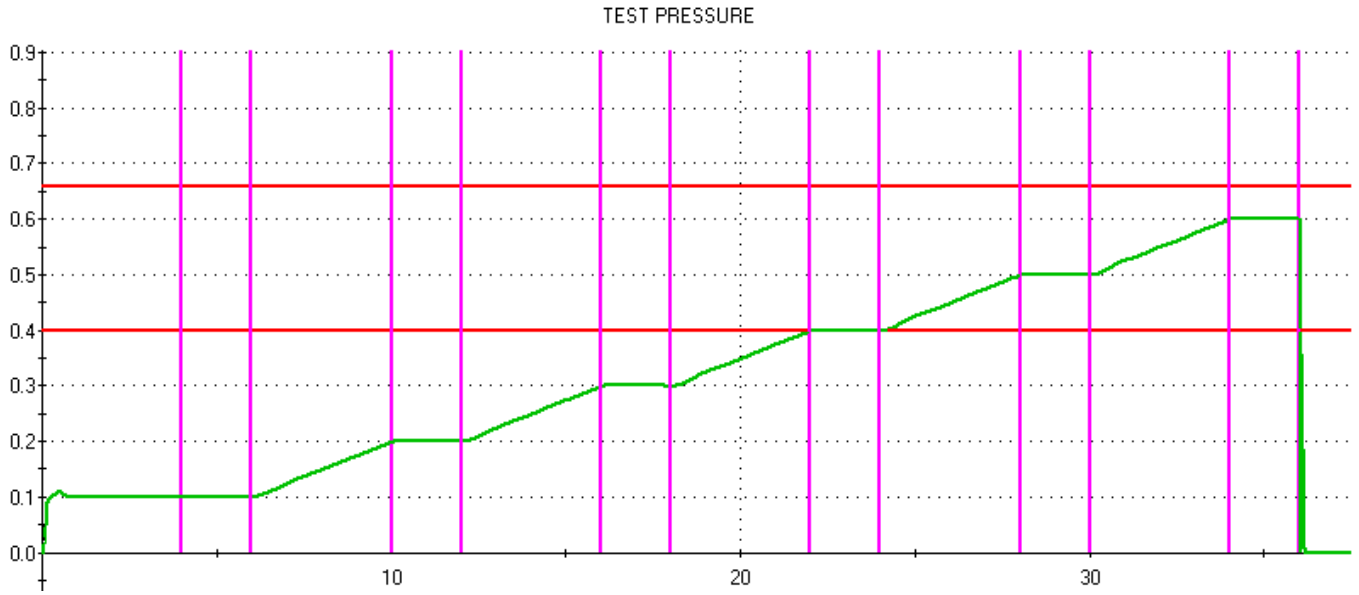
3.5. BURST TEST (OPTION)

The burst test allows following up the pressure which the part will burst.

To see the burst pressure, a pressure rise is generate with steps, once the pressure is dropping quickly, this pressure is recorded and the device will check if it is between the programmed thresholds.

The burst test runs currently only with volumes with a few tens cm^3.

Example :



The above burst test is configured with:

- Ramp with 6 steps.
- Rise time: 4 seconds.
- Step Time: 2 seconds.

3.6. VOLUME TEST (OPTION)

The volume test allows measuring the volume of a part.

An internal known volume (connected to the valve pressurization output) is filled to a known pressure. This volume is dumped in the test part, the difference of pressure consequent gives the test part volume with the formula:

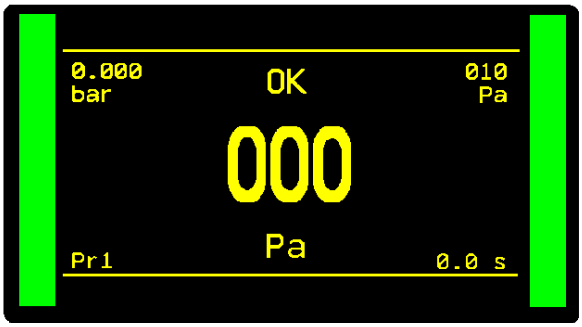
P1 V1 = P2 (V1 + V2) with **V1** internal volume **V2** test part volume

The internal known volume must be configured in the program parameters.

FRONT PANEL AND INTERFACES

1. APPEARANCE OF THE ATEQ FRONT PANEL

2. DISPLAY



Used to display measurements and adjustable parameters.

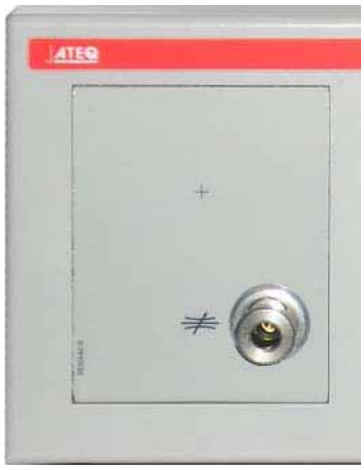
3. CYCLE KEYS

KEY	FUNCTION	KEY	FUNCTION
	START key: Starts a measurement cycle		**RESET** key: Stops a cycle in progress

4. NAVIGATION KEYS

KEYS	FUNCTIONS
	Scroll up or increase numerical values.
	Scroll down or decrease numerical values.
	ENTER key, opening a menu, entering a parameter, confirmation of a parameter.
	Esc for escape, return to the previous menu, or function, Escape without modifying a parameter.
	Programmable key by the user's preferences. The functions to assign are: **Special cycle menu**; **Special cycle**; **Parameters**; **Program defined**; **Run program**; **Last results**. *See sheet #688 "**Smart Key**".*

5. QUICK DISCONNECT (OPTION)



An optional Staublï quick disconnect is installed on the front panel of the instrument.

As the quick disconnect is part of the measurement circuit, it can be used with a calibrated orifice to simulate a leak in the part, calibrate the instrument with different leak test units and check the calibration of the instrument.

The second function is to check the value of the test pressure shown by the instrument with a pressure gauge or the **ATEQ Leak/Flow Calibrator (CDF)**.

As this connector is part of the measurement circuit, all its connections must be air tight.

AIR SUPPLY

Air supply is via the filter located on the rear panel of the instrument.

When an electronic regulator is installed in the instrument with test pressures above 800 kPa (8 bar) (normal service pressure), another "high pressure" port for the regulator supply circuit is installed on the instrument.

It is essential that the air supplied is clean and dry. Even though there is a filter, supplied with the instrument, the presence of dust, oil or impurities may cause malfunction.

When the instrument is working in vacuum conditions, impurities must be prevented from being drawn into its interior. For this purpose we strongly recommend that a suitable airtight filter is installed between the test part and the instrument. This filter can be supplied by **ATEQ**.

The presence of impurities, oil or humidity in the air may cause deterioration which will not be covered by the warranty.

In accordance with ISO standard 8573-1 concerning classes of compressed air for measurement instruments in an industrial environment:

ATEQ recommends:

- Grain size and concentration CLASS 1 (0.1 µm and 0.1 mg/m^3)
- Dew point under pressure CLASS 2 (- 40° dew)
- Maximum concentration of oil CLASS 1 (0.01 mg/m^3)

ATEQ recommends the installation:

- of an air dryer to provide dry air at less than - 40° dew point,
- of a 25 micron and 1/100 micron double filter.

Optimisation of operation:

The supply pressure must always be between 4 and 8 bar to ensure that the pneumatic valves operate with optimum efficiency.

When a mechanical regulator is used, the supply pressure must be a minimum of 100 kPa (1 bar) greater than test pressure with a minimum of 400 kPa (4 bar).

If an electronic regulator is used, the regulator input pressure must be at least 10% greater than the value of full scale on the electronic regulator + 100 kPa (+ 1 bar).

START-UP SETTING

1. POWERING UP THE ATEQ 6TH SERIES

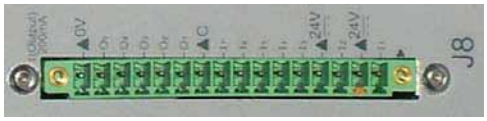
The powering the **ATEQ 6th series** can be done by three ways depending of the option ordered by the customer.

1.1. SUPPLY WITH 24 V DC - 2A ON THE M12 CONNECTOR

Connect the power supply fitted with the device. This option is not available if the connector is used for the network fieldbus (Devicenet / Profinet).

- Pin 2 : + 24 V DC.
- Pin 4 : ground 0 V.

1.2. SUPPLY WITH 24 V DC - 2A ON THE RELAY BOARD



Connect by the following way:

- 24 V DC on the pins 2 or 4.
- 0 V on the pin 16.

1.3. SUPPLY WITH 100 / 240 V AC AND ON/OFF SWITCH

With 90 to 240 V DC (50W) network with built in power supply. The instrument is used for sampling or laboratory setting: power the instrument with a power cord (instrument with built in power supply).

I : ON / O : OFF.

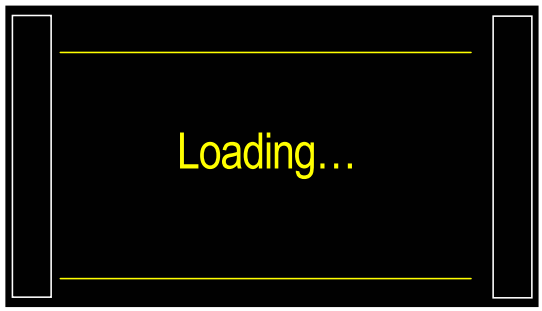
For North America, the standard way to power the instrument is to supply 24V to pin 2 or 4 and ground pin 16 of the J3 connector.

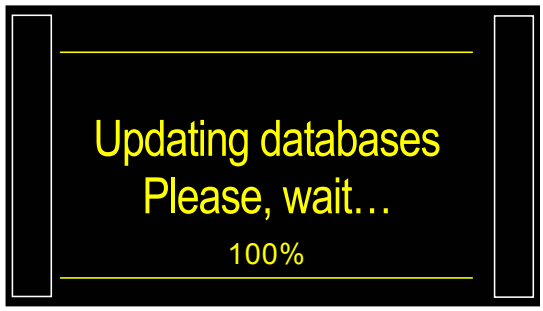
2. PROCEDURE

The image on the right is displayed after power on.

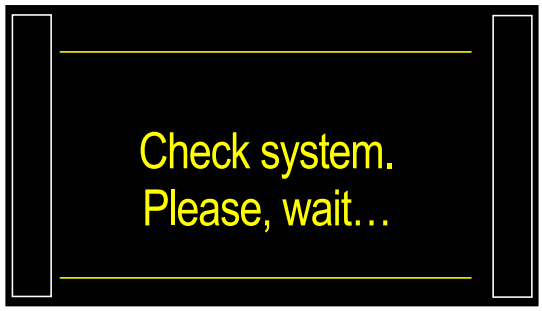
Load the internal program…

***Note**: following a program update of the device, this start step can take up to 2 minutes.*





Check all the built in components.



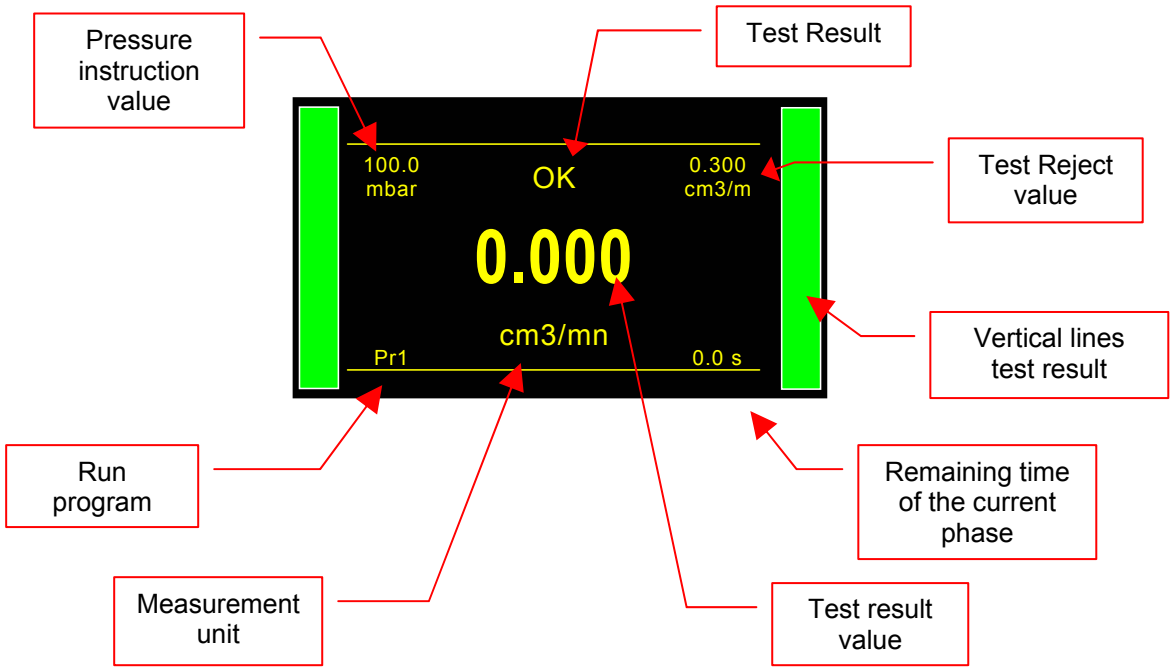
Displays the program version and measurement characteristics.

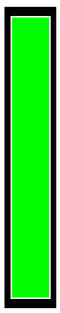
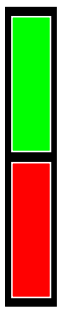
***Note**: The information given above may vary against the characteristics of the device.*

When the window on the right is displayed, the instrument is ready to test

***Note**: the device goes on the last program carried on.*

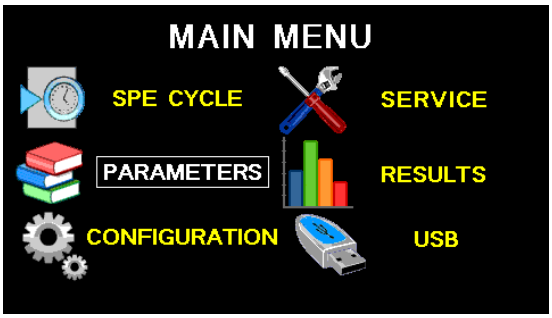
3. SCREEN DÉTAIL



			
Green light: **Pass** part.	**Red** light: **Fail** Part	Flashing **Red** light: **Alarm**	**Green** and **red** lights: **Reworkable** Part

4. CREATION OF TEST PROGRAM

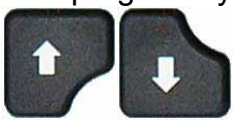
To access to the parameters menu, from the cycle menu, press the OK or ESC keys.



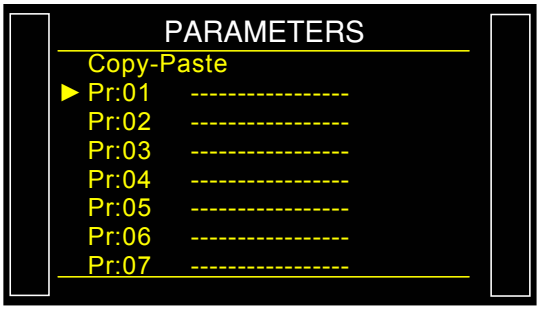
Then select the

menu

Select a program by using the



keys.



To create a new program, press an empty program (----------).

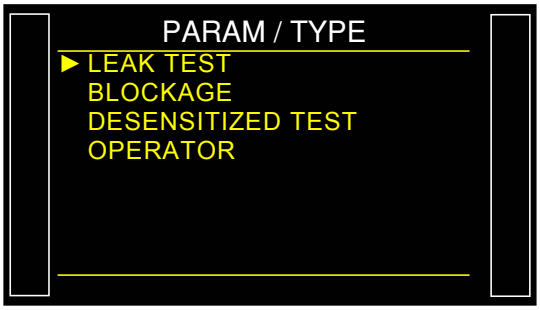
Then the test type selection window is displayed (see following paragraph).

4.1. SELECTION OF THE TEST TYPE

Four types of test are available:

The **PARAMETERS** menu gives access to four possible tests types :

- Leak test (**LEAK TEST**).
- Pressure test (**BLOCKAGE**).
- Test in desensitized mode (**DESENSITIZED TEST**).
- Operator test (**OPERATOR**). .
- Burst test (**BURTS TEST**).
- Volume measurement (**VOLUME**).

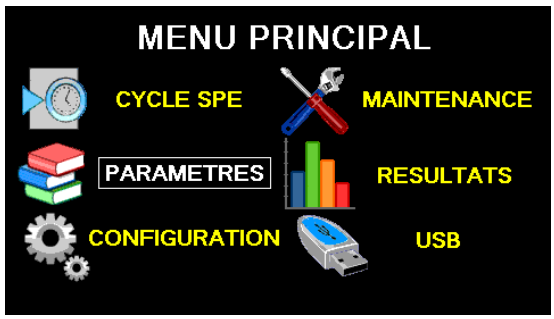


For the different tests types, see the sheet #673: **"Definition, characteristics and measurement principles"**.

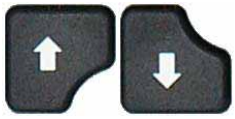
4. CREATION D'UN PROGRAMME DE TEST

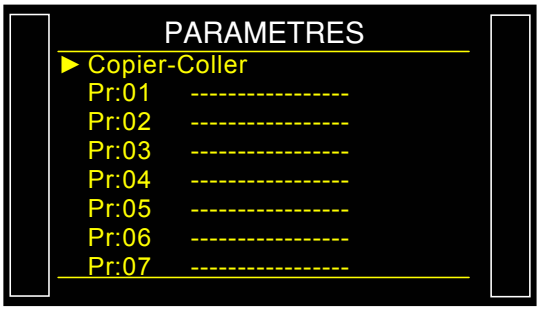
Pour accéder au menu de paramétrage, à partir du menu cycle, afficher le menu principal en appuyant sur les touches

Sélectionner ensuite le menu



Sélectionner un programme à l'aide des touches





Pour créer un nouveau programme, appuyer sur le bouton d'un programme vide (----------).

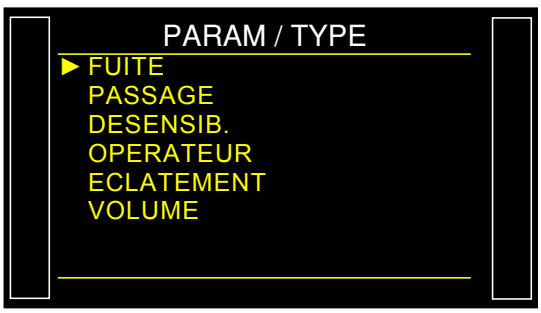
Ensuite s'affiche la fenêtre de sélection du type de test. (Voir paragraphe suivant).

4.1. SELECTION DU TYPE DE TEST

Quatre types de test sont disponibles.

Le menu **PARAMETRES** donne accès à quatre types de test possibles :

- test de fuite (**FUITE**),
- test de pression (**PASSAGE**),
- test en mode désensibilisé (**DESENSIB**),
- test opérateur (**OPERATEUR**),
- test d'éclatement (**ECLATEMENT**),
- mesure de volume (**VOLUME**).



Pour les différents types de tests, voir la fiche **#673** : "*Définitions, caractéristiques et principes de mesures*".

PROGRAM SELECTION

128 programs can be created in the instrument.

To select the program to run, please proceed as follow:

1. PROCEDURE

From the **CYCLE** menu, the device displays the run program.

To change the run program, press the key to increase program number and the key to decrease the program number.

If the selected program is not created, the message "**ERROR**" is displayed.

LEAK PROGRAM PARAMETERS

This sheet is for the leak test parameters only, for the others tests types, see the sheet about the type.

1. ADJUST PROCEDURE

The procedure to set test parameters is identical for each timer (fill, stabilization, test...) example with coupling time A:

The instrument can handle up to 128 different test programs.

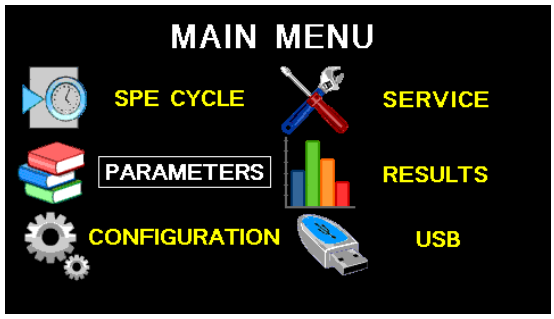
To access to the parameters menu, from the cycle menu, press the

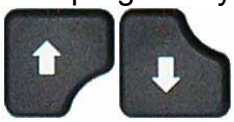
or

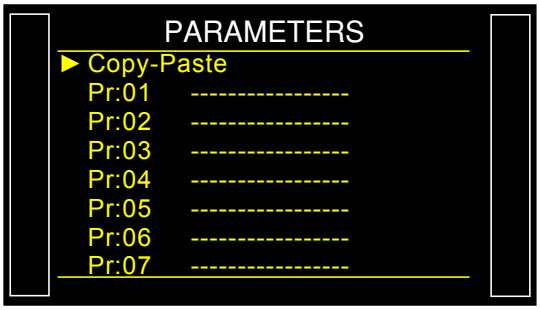
keys.

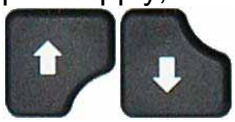
Then select the

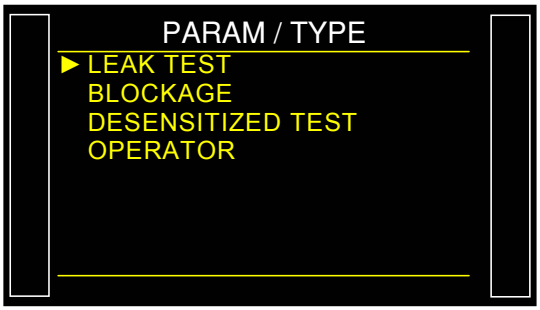
menu



Select a program by using the  keys.

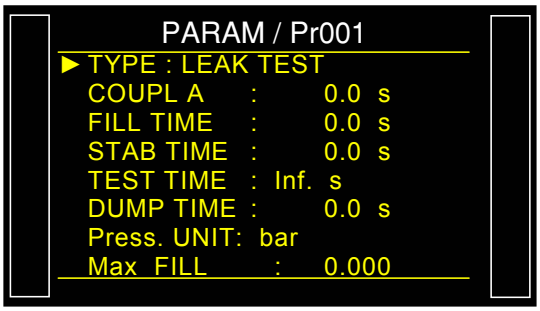


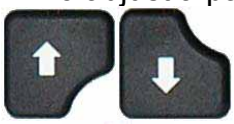
If the program is empty, the device will ask the test type to apply, select it with the  keys.

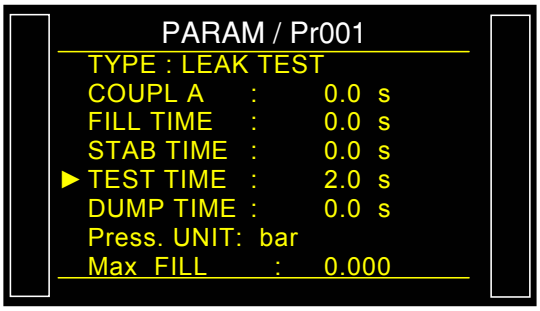


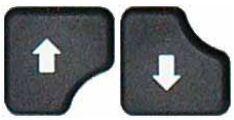
***Note**: This menu may change following the device options.*

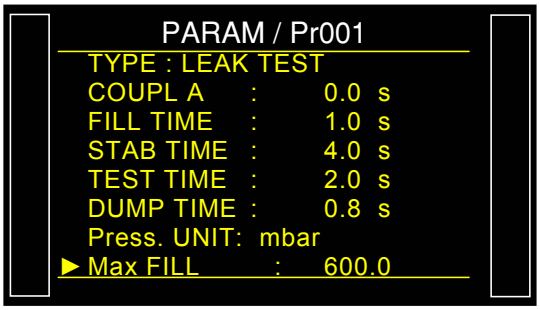
The programs parameters are displayed.
Select it one by one to adjust them.



To adjust a parameter, select it with the  keys, and then validate with the key, the cursor slide to the right hand.



With the  keys, adjust the parameter to the value you want, and then validate with the key.



Do the same process for all the others parameters.

Note: the parameters adjust access is only with the USB stick access permission with a lock code "**Password**" (the padlock may not appear in the bottom bar).

2. PARAMETERS DEFINITION

2.1. COUPLING TIME

Coupling times A and B are the 1st timers of the cycle.

If there is no automatic connector, coupling time A is a part of the cycle.

If an instrument is fitted with an automatic connector, coupling time A delays the pressurization of the test part by allowing the activation of a first cycle connector at the test start. Coupling time B allows the activation of a second automatic connector.

2.2. FILL TIME

This is the time allowed for the pressurization of the part to be tested. It must not be too long (waste of time) or too short (the pressure in the component is at risk of not being sufficient due to drops in pressure caused by temperature changes).

To determine the appropriate fill time, it is necessary to set the **Fill Time** in order to make it **Too Long** (TLFT), then to shorten it until a drop in pressure occurs due to thermal effects.

Determine the TTLR by using the following formula:

$$TLFT = \sqrt[4]{\text{volume in cm}^3 \text{ x fill pressure in mbar}}$$

- ✓ Carry out a cycle. When the instrument switches to the stabilization period, the pressure must remain stable.
- ✓ A pressure drop (since there will be no fall in pressure due to thermal effects) signals the presence of a large leak; check the test part and the pneumatic assembly components, then start again.
- ✓ If the pressure remains stable, the part does not contain a large leak and the fill time is too long. Shorten it progressively by carrying out cycles until a drop in pressure is noticeable.
- ✓ As soon as a fall in pressure due to thermal effects appears, the fill time has become too short. Increase it slightly.

2.3. STABILIZATION TIME

- ✓ This time is used to equalize the pressure between the **TEST** and **REFERENCE** parts.

  Two phenomena may interfere with the equalization:

  Different tubing

- ✓ The first phenomenon that may appear is a pressure variation between the components, caused by thermal effects. In fact, if the connection tubes are different (length or diameter) the target pressure will be reached faster in the part with the most favorable setup. If the instrument switches to test too early, the instrument will indicate the presence of a large leak.

Different volumes

The second phenomenon which may appear is a pressure difference between the parts due to their differing volumes.

If, at the end of the fill time, the volumes are different, the component with the smaller volume will stabilize faster. If the instrument switches to test too early, the instrument will indicate a large leak.

- ✓ To determine the correct stabilization time, it is necessary to set a long time so that the reading at the end of the test time is very close to zero.
- ✓ Set the stabilization time to four times the length of the fill time.
- ✓ Carry out a cycle. When the instrument switches to test, the result must be close to zero.
- ✓ If there is a drop in pressure, there is a small leak present. Check the test part (or the reference part in case of a negative pressure drop) and the pneumatic connections then start again.
- ✓ If the pressure is stable, the part does not leak and the stabilization time is therefore too long. Progressively shorten and carry out cycles (wait one minute between each cycle) until you start seeing of a drop in pressure. This indicates that the stabilization time has become too short. Increase it slightly.

2.4. TEST TIME

The test time depends on the programmed reject level and operation mode.

In the dP/dt (Pa/s) mode, the variation in measured pressure is due to the drift in the pressure drop (similar as a speedometer in a car).

In the dP (Pa) mode, the pressure variation measured is the total of the pressure drop over the whole test time (similar as an odometer in a car). This mode is more unstable, but is more sensitive. The instrument totals all the variations occurring due to variations in volume or temperature over the whole test time.

2.5. DUMP TIME

During the dump time, the instrument vents the part to atmosphere. The instrument will as default set a dump time of zero.

The dump valve stays opened until the next test cycle. In case of very low pressure, the dump time can be zero; the fixture will vent when opened.

2.6. PRESSURE UNITS

The different units are: bar, mbar, PSI, Pa, kPa, MPa

2.7. MAXIMUM FILL

This function is used to set a maximum limit for the fill pressure. A warning is triggered if this limit is exceeded.

When test time is infinite, the maximum fill isn't monitored. Care should therefore be taken to avoid excess pressure being applied to the part during the test.

2.8. MINIMUM FILL

This function is used to set a minimum limit for the fill pressure. A warning is triggered if this limit is not reached. When test time is infinite, the minimum fill isn't monitored.

2.9. SET THE FILL PRESSURE

This function is available with electronic regulator equipped instruments. Simply set the test pressure value and the instrument adjusts it automatically.

2.10. REJECT UNIT

The different units are: Pa, Pa/s, Pa HR (high resolution), Pa HR/s (high resolution), Cal-Pa, Cal-Pa/s, cm^3/min, cm^3/s, cm^3/h, mm^3/s.

If a flow unit is selected, two parameters are added to the program:

- ✓ choice of the flow calculation using Pa or Pa/s,
- ✓ the volume of the part to be tested (in addition to tube and internal volume).

There is a special "**volume compute**" cycle which enables the volume of a part to be estimated.

***Note:** high resolution enables an extra figure to be displayed (i.e. 1/10 Pa)*

2.11. TEST FAIL

This function is used to set a limit level below which the part is considered to be bad. This is your test part reject level.

2.12. REFERENCE FAIL

This function is used to set a limit level below which the reference part is considered to be bad. This is your reference part reject level.

When the reject reference value is zero, the program automatically set an absolute value of the test reject (for example: if the test reject is 10 Pa, and the reference reject value equal to zero, the program internally set the reference reject to be – 10 Pa). The opposite is not true.

3. PROGRAMS MANAGEMENT

3.1. COPY - PASTE A PROGRAM

This menu is to copy a program to another.

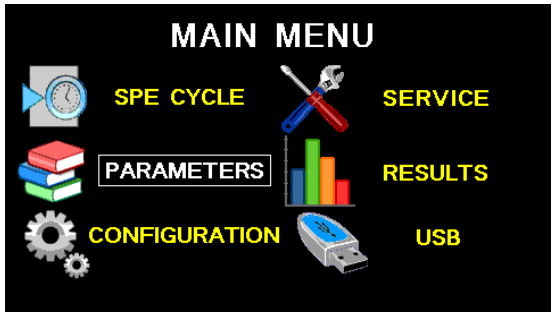
To access to the parameters menu, from the cycle menu, press the

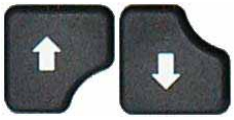
or

keys.

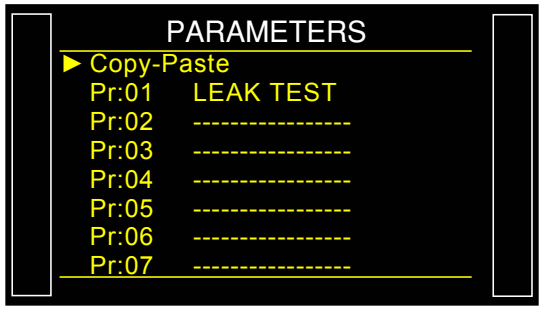
Then select the

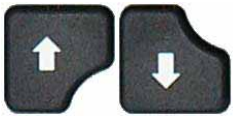
menu



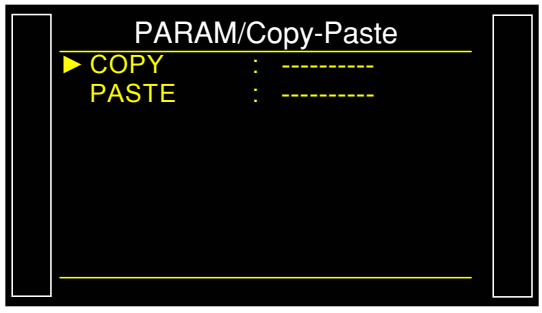
Select the "**Copy-Paste**" menu with the  keys and then validate with the

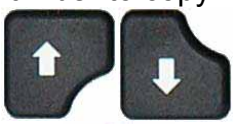
key.



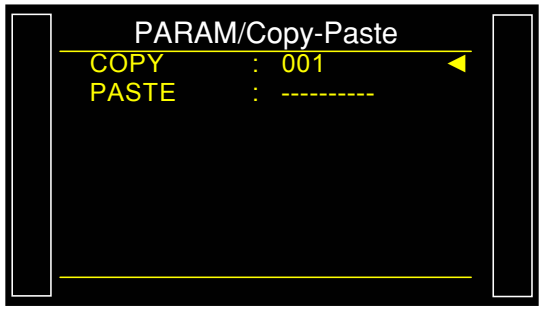
Select the "**COPY**" line with the  keys and then validate with the

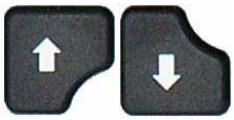
key.

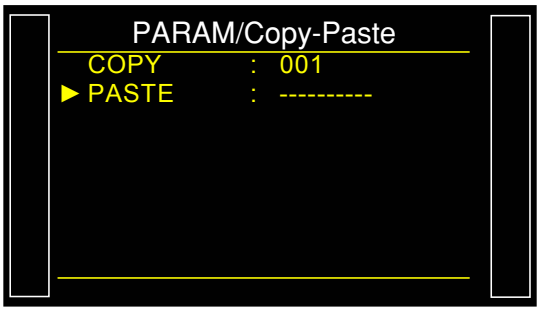


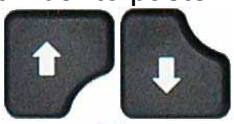
Adjust the program number to copy in the "**COPY**" line with the  keys and then validate with the

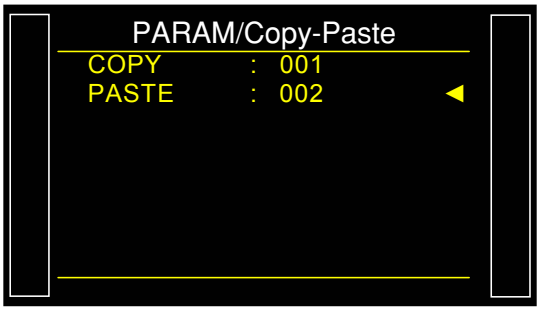
key (here program number 1).



Select the "**PASTE**" line with the  key and then validate with the key.

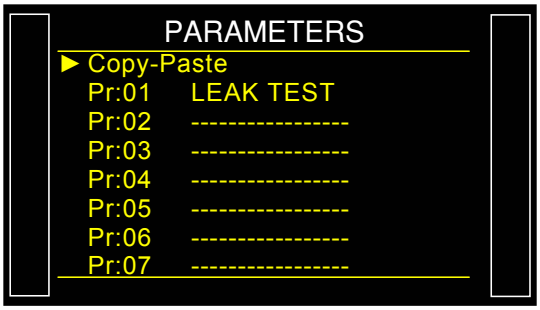


Adjust the program number to paste in the "**PASTE**" line with the  keys and then validate with the key (here program number 2).



***Caution!** If the destination program is not empty, it will be directly crushed by the source program without prior notice.*

The parameters of the program number 1 have now been copied into program number 2. In this example the program number 2 is an exact copy of program number 1.



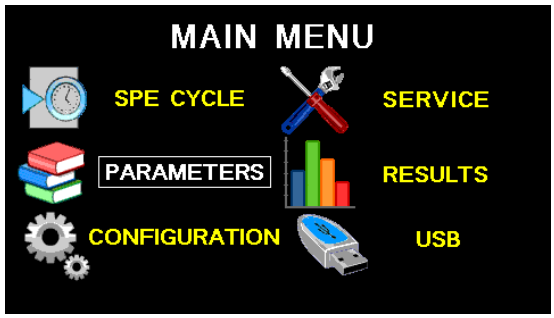
3.2. PROGRAM DELETION OR PROGRAM NAME DELETION

This menu allows deleting a program or its name.

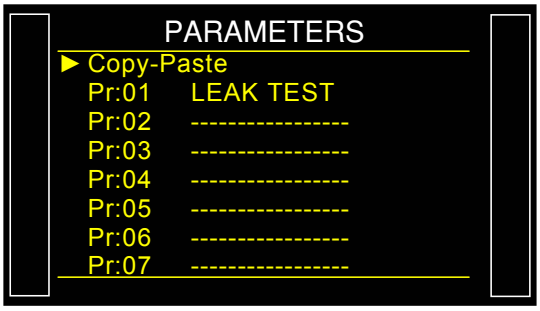
To access to the parameters menu, from the cycle menu, press the OK or ESC keys.

Then select the

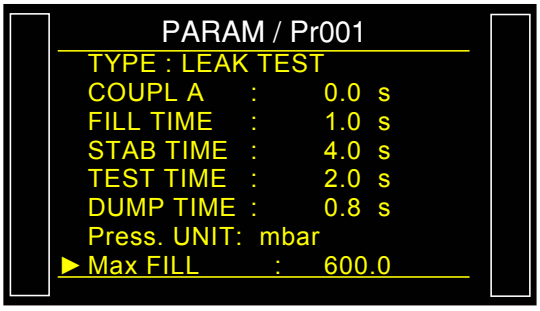
menu



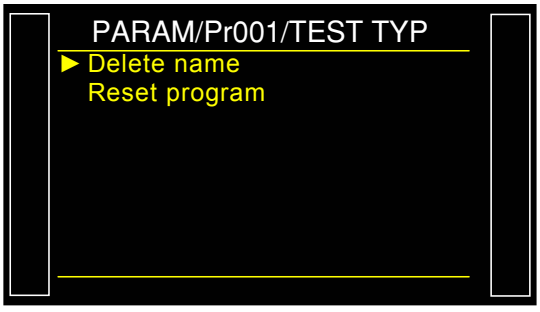
Select the program to delete by using the keys and then validate with the OK key.



The program parameters are displayed, select "**TYPE**" with the keys and validate with the OK key.



The delete menu appears, There are two possibilities: delete the program name or delete the whole program. Select what to delete with the keys and then validate with OK key.



***Caution!** The program or program name deletion are instantaneous without prior notice.*

***Note**: if the "**Program**" deletion operation is done first, then the "**Program name**" deletion is done too.*

3.3. AVAILABLE FUNCTIONS

The following list displays the available function for the leak test. For further information on these functions see the corresponding sheet :

- **Name**, see sheet #602,
- **Sequencing**, see sheet #603,
- **Units**, see sheet #604,
- **Filtering**, see sheet #622,
- **Automatic connector**, see sheet #605,
- **Calibration check**, see sheet #606,
- **ATR 0 - 1 - 2 - 3**, see sheet #607,
- **Pre-fill and fill types**, see sheet #608
- **Dump Off**, see sheet #630,
- **External dump**, see sheet #655,
- **Valves codes and auxiliaries output 24 V**, see sheet #609,
- **End of cycle**, see sheet #610,
- **Mini valve**, see sheet #611,
- **Recovery**, see sheet #612,
- **Sealed components / 2 / 3**, see sheet #613,
- **N Tests**, see sheet #614,
- **Peak hold**, see sheet #620,
- **Reference Volume**, see sheet #615,
- **Stamp**, see sheet #617,
- **Temperature Correction 1**, see sheet #618,
- **Sign**, see sheet #621,
- **Flow reject**, see sheet #624,
- **No Negative**, see sheet #625,
- **Absolute**, see sheet #626,
- **Synchro test**, see sheet #656,
- **By-pass**, see sheet #691,
- **Dislpay Mode**, see sheet #627,
- **Buzzer**, see sheet #639.
- **Cut Off**, see sheet #686,
- **ATF**, see sheet #685.

TEST CYCLE MANAGEMENT

1. STARTING A CYCLE

1.1. TEST PRESSURE ADJUSTMENT

When instrument is fitted with an electronic regulator, the test pressure value is that shown since this is the fill target. No special cycle is required.

When instrument is fitted with a mechanic regulator, the test pressure has to be adjusted by running the special cycle "**Regulator adjust**".

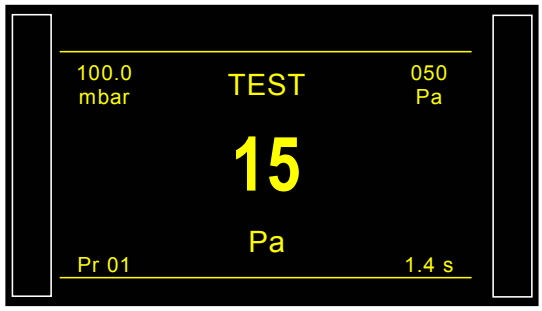
***Reminder**: the regulator input pressure must be at least 10% greater than the value of full scale on the electronic regulator + 100 kPa (+ 1 bar).*

1.2. RUN A MEASUREMENT CYCLE

Press the **START** to run the measurement cycle.

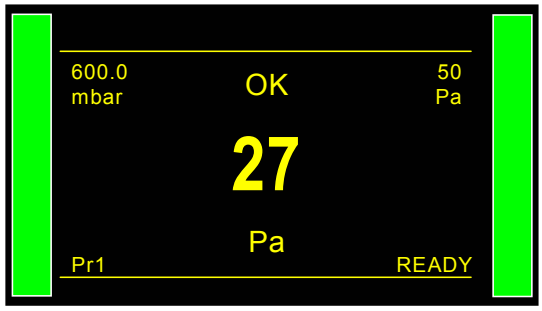
The following steps are displayed on the screen :

COUPLING,
FILL,
STABILIZATION,
TEST,
DUMP.

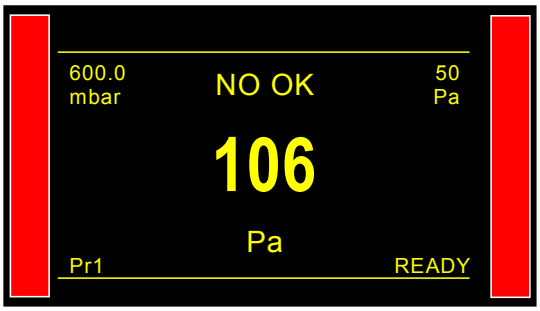


At the end of the cycle the result is displayed.

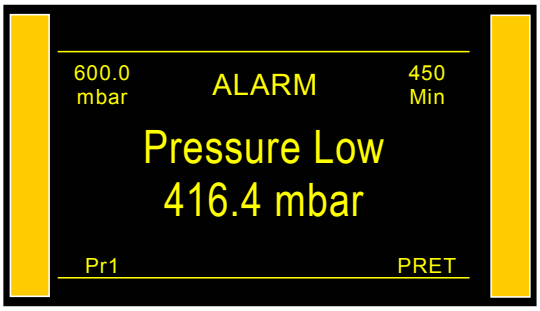
Result with a **Pass part**:



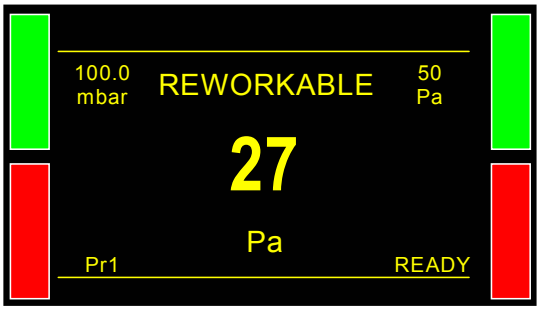
Result with a **Fail part**:



Result with an **Alarm**:



When the part is "**Reworkable**", the display is like the following one.



1.3. STOPPING A CYCLE

Press the **RESET** key to stop the measurement cycle. The display "**READY**" indicates that the instrument is ready to perform a new measurement cycle.

ACCESSORIES

1. POWER SUPPLY

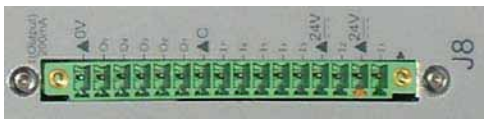
Three ways for powering the instrument, this is depending of its installation and following the option at the order. There's two ways for powering with 24 V DC.

1.1. SUPPLY THE DEVICE WITH 24 V DC - 2A ON THE M12 CONNECTOR

Connect the power supply fitted with the device. This option is not possible if the connector is used for the Fieldbus network. (Devicenet / Profinet).

- Pin 2: + 24 V DC.
- Pin 4: ground 0 V.

1.2. SUPPLY THE DEVICE WITH 24 V DC - 2A ON THE RELAY BOARD



Connect by using the following mean:

- 24 V DC on the pins 2 or 4.
- 0 V on the pin 16.

For North America, the standard way to power the instrument is to supply 24V on the relay board connector.

1.3. SUPPLY WITH 100 / 240 V AC AND ON/OFF SWITCH

With 100 to 240 V DC - 50 W network with built in power supply. The instrument is used for sampling or laboratory setting: power the instrument with a power cord (instrument with built in power supply).

I : ON / O : OFF.

The wire is fitted with the device.

OPTIONAL ACCESSORIES

1. CALIBRATED MASTER LEAK

Calibrated leaks are used to check the instrument's calibration or to setup the reading in cc/min.

Pressure	Master leak/flow type with air at 20°C and 1013 hPa										
	A	**B**	**5**	**C**	**D**	**50**	**E**	**F**	**G**	**1000**	**5000**
2 kPa (20 mbar)					8,2	16	34,7	1,3	2,7	5,8	52
5 kPa (50 mbar)				8,7	21	41	1,5	3,3	6,8	15	130
15 kPa (150 mbar)		6,0	13	27	64	2,2	4,7	10	21	47	383
20 kPa (200 mbar)		8,1	17	37	88	3,0	6,3	14	29	64	505
30 kPa (300 mbar)	5,8	13	26	57	2,3	4,6	9,8	21	45	99	740
50 kPa (500 mbar)	10	22	46	1,7	4,1	8,2	17	38	81	176	1198
75 kPa (750 mbar)	17	36	75	2,8	6,7	13	28	62	132	281	1823
85 kPa (850 mbar)	19	42	88	3,3	7,8	15	32	73	155	325	2049
100 kPa (1 bar)	23	51	1,8	4,0	9,5	19	40	90	190	394	2404
200 kPa (2 bar)	58	2,2	4,6	10	24	46	95	234	486	904	4709
400 kPa (4 bar)	2,7	6,1	13	27	61	118	233	665	1305	2086	9357
1 MPa (10 bar)	11	24	51	99	213	394	729	2810	4620	6143	
2 MPa (20 bar)	31	65	134	247	512	916	1661				
- 10 kPa (-100 mbar)			7,8	17	39	78	2,8	6,1	13	28	237
- 20 kPa (-200 mbar)		7,1	15	31	75	149	5,3	12	24	53	427
- 50 kPa (-500 mbar)	7,4	15	32	69	163	324	11,3	25	52	112	813
- 75 kPa (-750 mbar)	9,8	20	42	90	212	418	14,5	29	66	142	991
- 85 kPa (-850 mbar)	10,6	22	45	97	225	443	15,4	35	70	149	1032
- 95 kPa (-950 mbar)	11,3	23	47	101	235	462	15,9	36	73	153	

Note:** The values indicated above are given for information and may vary by +/- 20%. The true rate is precisely measured before delivery with an accuracy of +/- 5% up to 1MPa.cm^3/min (10 bar.cm^3/min) and +/- 3% from this value. **Special master leaks can be manufactured on request, within 5% of the requested value.

The calibrated leaks must be used with clean dry air.

- ✓ These leaks must not be dipped in or sprayed with water. It is essential that they are stored in their case after usage.
- ✓ The leaks must be checked periodically by the company's metrology department or by **ATEQ's** metrology service.
- ✓ Check that there is an O-ring seal and that it is in good condition.
- ✓ To check that the leak has not been plugged, attach a piece of flexible tubing to the leak and submerge its extremity in the water to look for bubbles. This test should be performed using a pressure instrument only not vacuum ATEQ instrument.

2. FILTRATION KIT

For a better reliability of the instruments, it is recommended to use clean dry air. The filtration kit must be connected to the air input located at the rear of the instrument.

It consist of a dust filtering cartridge (5µm) and another cartridge (0.01 µm) filtering residual oil pollution down to 0.01 ppm.

3. NEEDLE VALVE AND LEAK/FLOW CALIBRATOR

3.1. CDF60 (LOW FLOW CALIBRATOR)

The **ATEQ CDF60** Leak/Flow Calibrator checks the calibration of leak and flow measuring instruments as well as calibrated leaks and jets.

This light, compact and user friendly calibrator is essential for field or laboratory checks, when accuracy and repeatability cannot be compromised and large instruments are too bulky or too expensive.

This portable, compact and user-friendly instrument lets you adjust very accurately your leak or flow rate with a real time cc/min reading on the display.

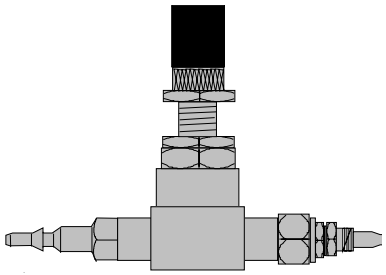
You can adjust any leak or flow rate within your measuring range, store test results and export them to an Excel spreadsheet.

The **CDF60** is fully traceable to international standards and every unit has been calibrated in **ATEQ**'s state of the art calibration facility and is delivered with a calibration certificate.

3.2. CDF (LEAK/FLOW CALIBRATOR)

The **ATEQ** leak/Flow calibrator is a multiple range flow meter intended for checking leak testing equipment and particularly **ATEQ** instruments.

3.3. NEEDLE VALVE



Needle valves are used to verify the leakage limits. These valves have an adjustable leak and depending on the model allow adjustments of between a few cm3/h to several l/min.

These valves can be easily misadjusted and therefore require the frequent use of some means of checking the setting (ex: Leak calibrator ATEQ).

***Note:** It is strongly recommended that you do NOT leave a needle valve permanently connected on a leak detection instrument with automatic calibration every "n cycles".*

4. ATEQ 3/2 VALVE (Y-VALVE)

The ATEQ valve and mini valve are 2 positions, 3 ways spring returned, pressurized and leak-tight valves. The valve comes with either a pneumatic or electric pilot.

The choice of a leak tight valve is extremely important when installed in the leak test circuit.

5. QUICK CONNECTORS WITH EXPANDABLE JOINTS

ATEQ quick connectors designed to be used manually or integrated into the leak tester's fixture. They connect the leak tester to your part reliably and assure leak tightness. Several connectors may be connected to the same manifold, piloted by an **ATEQ**, a PLC or manually.

They easily adapt to a large number of fittings and opening of varied dimensions. Their use ensures that non-machined walls can be guaranteed airtight.

There are 4 basic versions of the **ATEQ** quick connectors:

- ✓ SA for external connections,
- ✓ SI for internal connections,
- ✓ SAG and SIG for internal and external threads.

They come black anodized with engraved markings. Different types of seals are available depending on the requirements.

5.1. OPERATION

The connector is positioned manually, automatically or using cylinder.

Compressed air goes through the pilot port via a three way valve. The pressure pushes the piston which compresses the seal. The air tightness is therefore ensured.

5.2. STANDARD DIMENSIONS

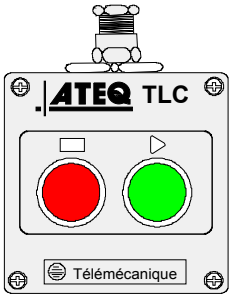
SAG and SIG have been designed for internal and external threads. For the time being, they are available in the following sizes: 1/2", 3/4", 1", 11/4", 11/2", 2", BSP.

The SA and SI are designed for internal and external tubes/bore with dimensions from 3 to 80 mm for the external diameters (SA), and from 10 to 75 mm for internal diameters (SI).

6. REMOTE CONTROLS

The remote control allows remote control and selection of various settings for **ATEQ instruments**. This remote control is connected to the instrument's relay board.

6.1. RESET/START REMOTE



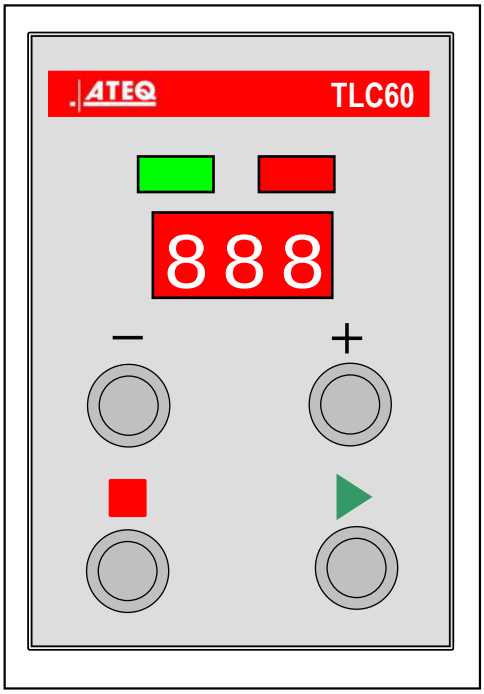
6.2. FOUR-FUNCTION 128 PROGRAMS REMOTE CONTROL REMOTE CONTROL

This remote control has four functions which can be used to control an instrument remotely.

The four functions on this remote control are as follows:

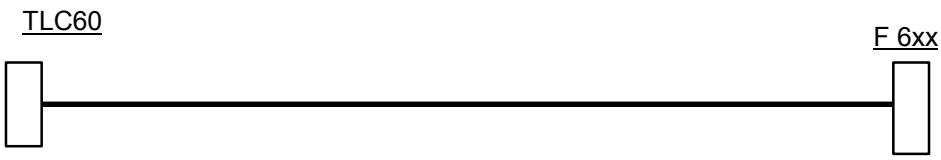
- ✓ Reset and start cycle.
- ✓ Increase or decrease program numbers.
- ✓ Display the selected program number.
- ✓ Display the test result, green indicator light for Pass, red indicator light for Fail or alarm.

***Note**: a program number can only be changed (increase or decrease) when no test cycle is running.*



At the device powering up, as the "End of cycle" information is not on, the TLC60 remote control displays alternatively its firmare version and the lights test.

6.3. CONNECTION DIAGRAM



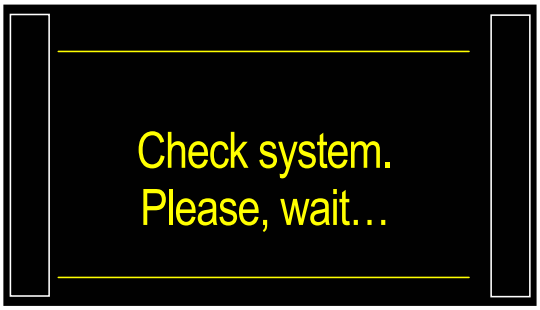
ERROR MESSAGES

The **ATEQ** instrument can display error messages if there are operational problems.

1. COMMUNICATION ERRORS

At starting of the device, the normal message appears:

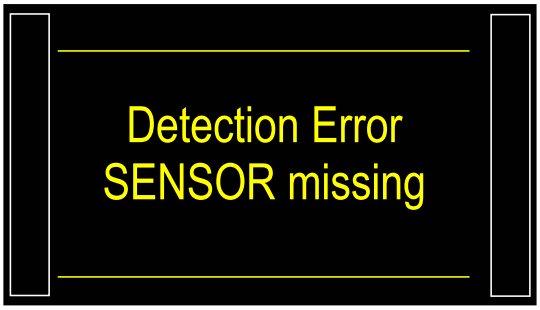
Check system.
Please, wait...



If a detection error of one of the component occurs, the following message appears:

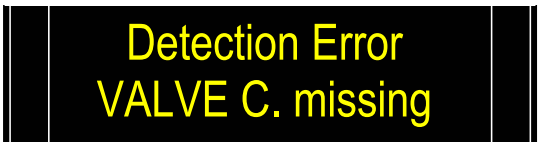
Detection Error
XXXX missing.

Detection error of the sensor board.



Detection error of the Inputs / outputs (I/O) sensor board.

Detection error of the valve codes board.



Turn off and turn on again the device, check if the measurement head is turning on too (pneumatics valves sounds).

If the issue persists, please contact **ATEQ**.

If the communication with the sensor board is lost after starting the device, the device will freeze on the run program number and won't carry on any test cycle.

An error with the sensor board is instantly detected and it needs 30 to 60 seconds to detect an error with the relay board and valve codes board.

2. MEASUREMENTS ERRORS

MESSAGE DISPLAYED	PROBLEM
>> F.S. REF.	Reference error. Leak in excess of the full scale. **Action**: check the reference circuit, part or fixture. Could also be an increase of pressure inside the test part.
>> F.S. TEST	Test error. Leak in excess of the full scale. **Action**: check the test circuit, part or fixture. Could also be an increase of pressure inside the reference part.
> F. SCALE	Pressure in excess of the full scale. **Action**: decrease the target pressure inside the program or the mechanical regulator (if equipped).
SENSOR ERROR	Differential transducer error. **Action**: contact ATEQ service department for repair (probably water or oil in the instrument's test circuit).
PRESSURE TOO HIGH	Pressure in excess of the maximum threshold. **Action**: check regulator settings, pressure limits, check whether the right regulator has been selected if there are two.
PRESSURE TOO LOW	Pressure below the min. threshold. **Action**: check supply pressure and regulator settings, the pressure limits, and whether the right regulator has been selected if there are two.
ATR ERROR	ATR error. **Action**: run another ATR learning cycle or check the ATR parameters.
CAL ERROR	Customer Unit Learning error. **Action**: carry out another learning cycle.
UNIT DRIFT FAIL	Custom unit drift following a custom unit check request. **Action**: check the programmed percentage of drift, the master leak, the test pressure...
VALVE ERROR	Commutation fault in the equalisation valve. **Action**: check supply pressure; contact ATEQ service department for repair.

MESSAGE DISPLAYED	PROBLEM
REGULATOR ERROR	**1)** The electronic regulator is not able to initialise correctly. **2)** The input pressure on the regulator must be at least 10 % of regulator full scale + 100kPa (+ 1 bar). **Action**: check supply network pressure or pressure at the regulator input. Contact ATEQ if the problem persists.
PR: XXX ERROR	PROG error: an empty program has been selected through the relay board (I/O board). **Action**: enter program parameters or select another program.
PPPP	Too many digits to display with the selected unit of pressure. **Action**: change unit or modify the minimum and maximum pressure limits if these and the test pressure can be used with this unit.
LEARNING ERROR	Sealed component learning fault. **Action**: carry out a sealed component learning cycle.
VOLUME <	Sealed component fault. Insufficient pressure drop, so volume abnormally small. **Action**: check the pneumatic test circuit (e.g. kinked tubing, blocked or other cause).
VOLUME >	Sealed component large leak fault. **Action**: Ensure that there is no leak in the pneumatic test circuit between the ATEQ instrument and the test part (e.g. cut tubing, torn or other cause) and also check that the chamber is airtight.
AUTO-TEST ERROR	Auto test error. The valve auto test cycle result is bad. **Action**: check that caps have been placed on the test and reference outputs, if the problem persists, the valve is leaking, it should be serviced or replaced.

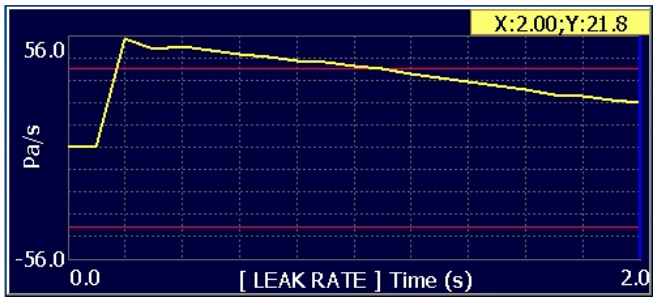
ATF FUNCTION

1. PRINCIPLE

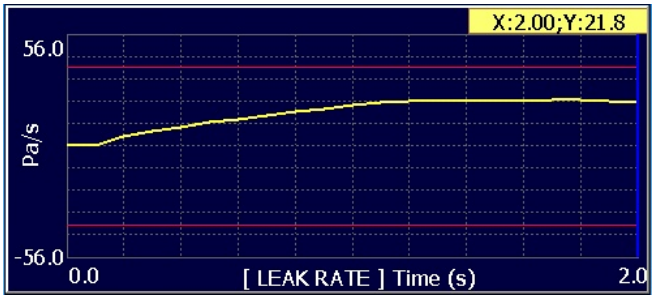
This function is only available with the units with a time: Pa/s, cm^3/min, cm^3/s, cm^3/h, etc..

This is to absorb the important leak variations at the starting of the measurement, by the programmed time.

Example: for the same part, test time = 5s, ATF = 2s (final leak about 8 PA/s).



Without ATF



With ATF

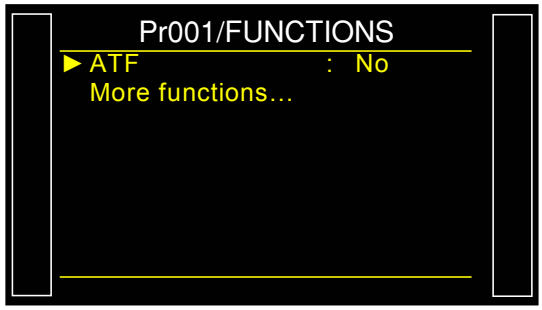
2. PROCEDURE

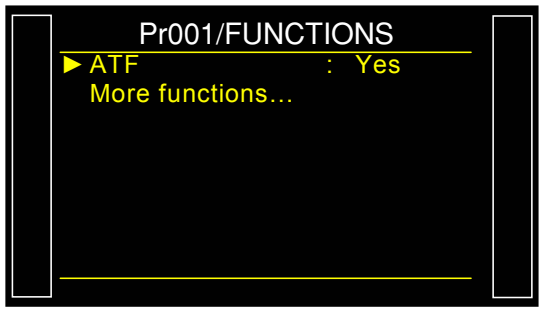
Check the function is not hidden.

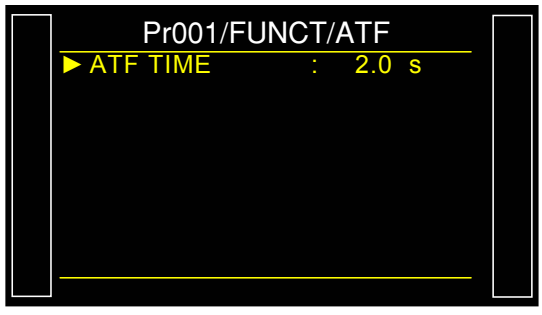
Then press the OK key, the cursor switch to the right hand.

***Remind**: this function appears only with flow units, else it's not displayed.*

By using the arrows, select "**Yes**" and validate with the OK key.







Then adjust the "**ATF TIME**" to enter the absorb time parameter.

"CUT OFF" FUNCTION

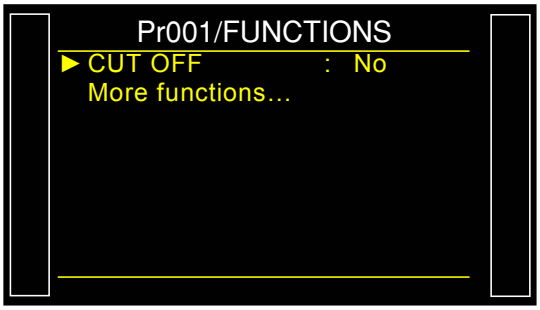
1. PRESENTATION

With the **CUT OFF** function, all the measurements less than the configured percent will have the value 0.

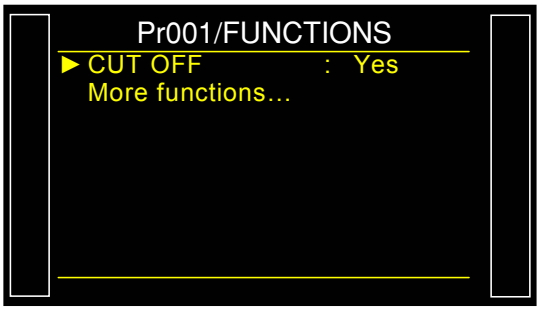
2. PROCEDURE

Check the function is not hidden.

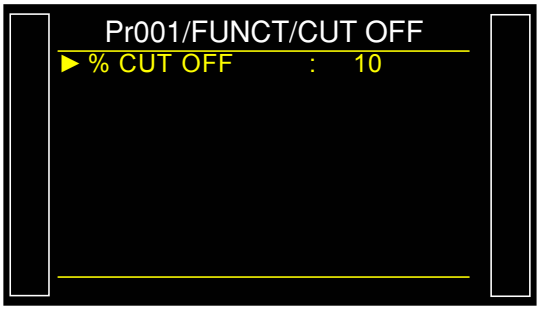
Then press the OK key, the cursor switch to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key.



Then adjust the "**% CUT OFF**" parameter that all the measurements under this percent value will be displayed 0.



DISPLAYING RESULTS IN FLOW UNIT

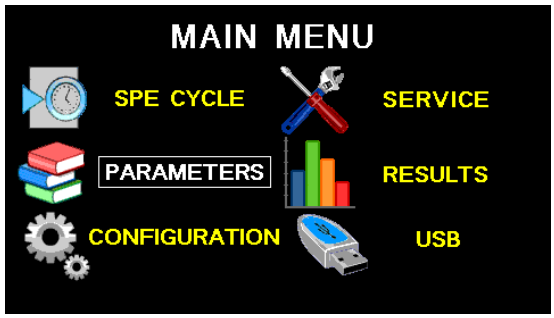
The sensor that measures the leak is making a pressure drop measurement. To convert the pressure measurement in flow unit, the instrument needs to be given the volume of the test circuit.

1. PROCEDURE

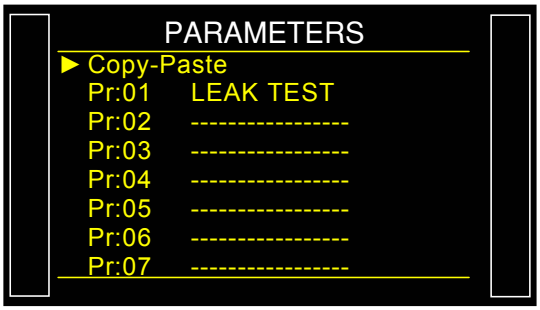
To access to the parameters menu, from the cycle menu, press the OK or ESC keys.

Then select the

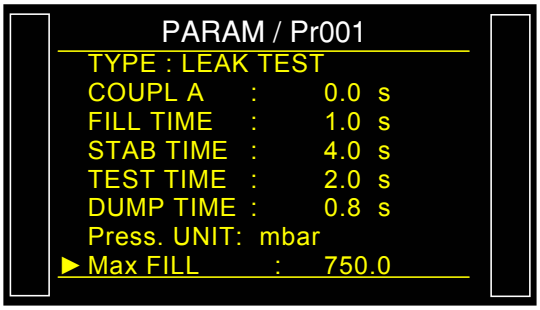
menu



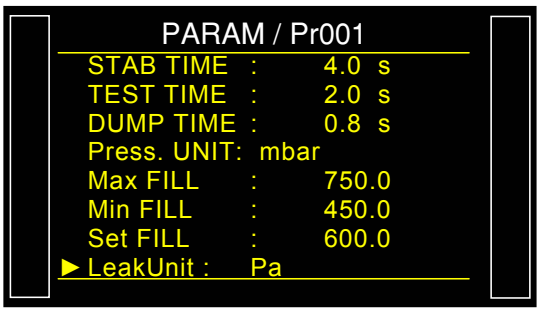
Select a program by using the keys. Here program number 1. The parameters are displayed.



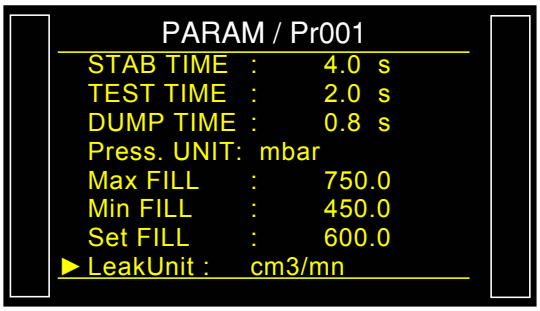
Adjust or check the parameters.



With the keys, go to the "**Leak Unit**" parameter and validate with the OK key.

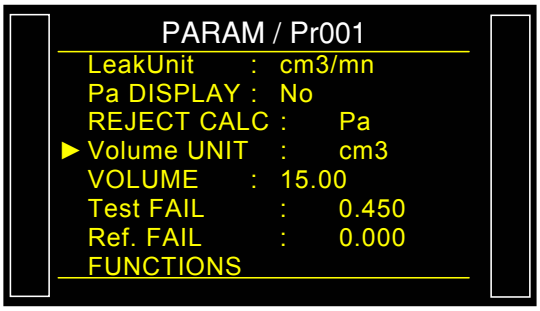


Change leak unit by a flow unit: example **cm3/min** or similar.

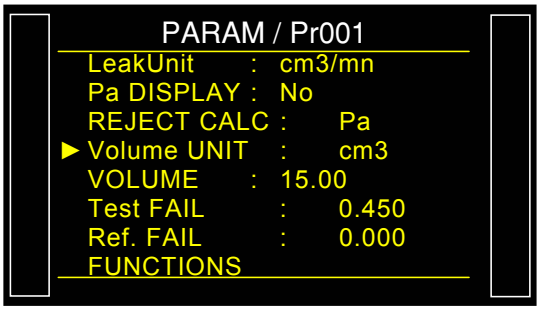

PARAM / Pr001
STAB TIME : 4.0 s
TEST TIME : 2.0 s
DUMP TIME : 0.8 s
Press. UNIT: mbar
Max FILL : 750.0
Min FILL : 450.0
Set FILL : 600.0
► LeakUnit : cm3/mn

Some more parameters are displayed: "**Volume UNIT**" and "**VOLUME**".

Select "**Volume UNIT**".

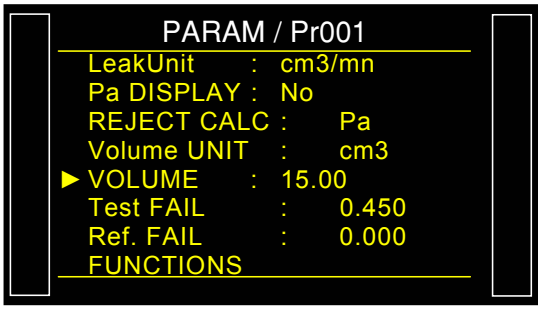


Choose the volume unit among: **cm^3**, **mm^3**, **ml** or **l**.

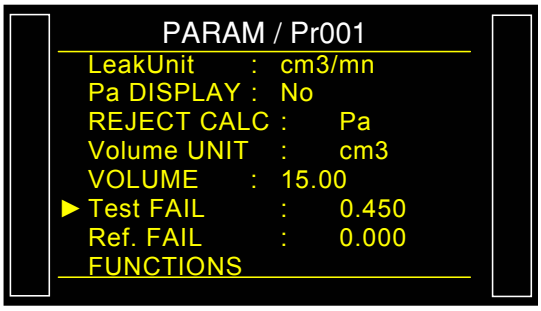


Select the "**VOLUME**" parameter.

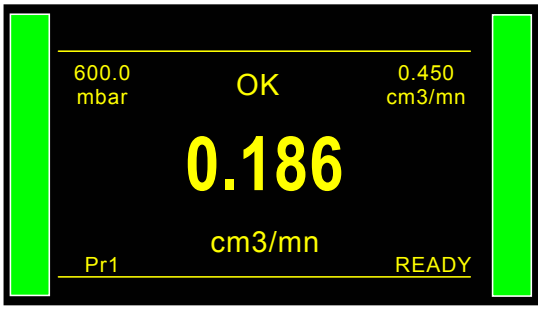
Enter the estimated value of the volume of the part to be tested, in the unit previously selected (cm3 in this example). The volume is the volume internal of the instrument + the volume of the tubing + volume of the part. The volume will be readjusted later.



Select the "**Test FAIL**". Parameter, Enter the reject level for the leak test in the unit previously selected.

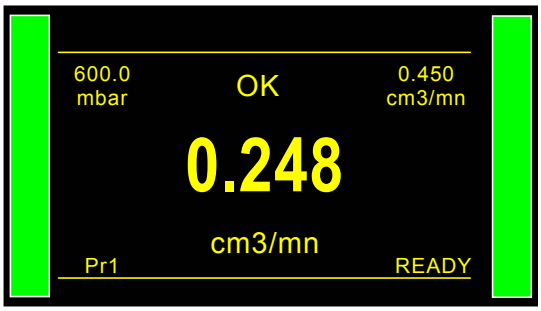


1) Start a **first** cycle with a known pass part and take note of the result value. Wait a minute.



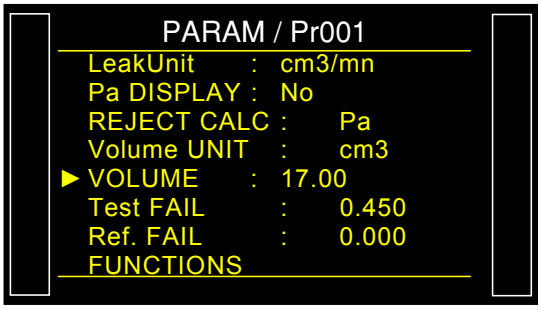
2) Start a **second** cycle with the same part but with the master leak connected to the device. The result displayed on the instrument should be:

Test result w/o leak + Value of the leak.



If the result displayed on the instrument is different than test result w/o leak + Value of the leak: we need to adjust the volume value inside the program parameters.

Back to the parameter page, and select the "**VOLUME**" parameter to correct it.



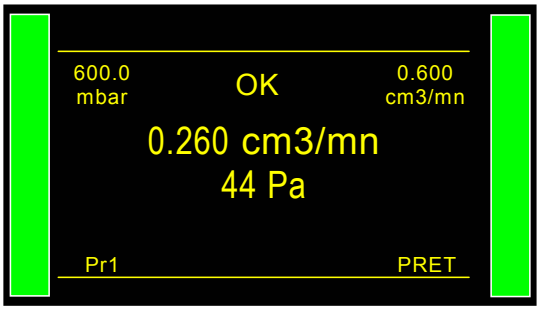
The relationship of the volume and the result is linear. If the displayed result is 10% higher than the **calibrated leak value + Test result w/o leak**, reduce the volume by 10%.

Wait one minute between test cycles to ensure accurate results. Repeat as necessary.

The formula that the instrument uses to convert Pa/s to cc/min is:

$$\textbf{Leak in Pa/s} = \frac{\textbf{Leak in cc/min}}{\textbf{Volume x 0.0006}}$$

If the option "**Pa DISPLAY**" is validated by "**Yes**" in the parameters, the leak result with the Pa unit is simultaneously displayed with the flow unit result.

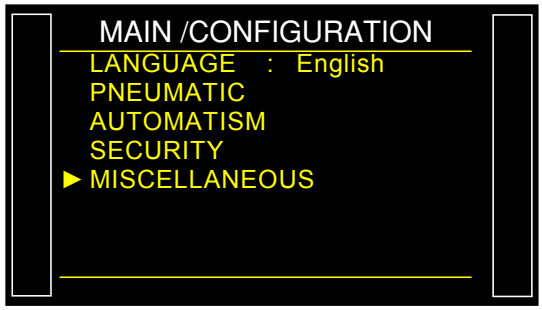


"SMART KEY"

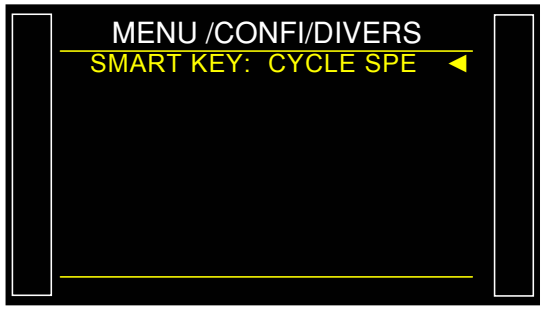
The "**Smart Key**" button is a programmable key, it can be programmed following the user preferences; this can have a direct access to the selected function.

1. PROCEDURE

From the "**CONFIGURATION**" menu, select the "**MISCELLANEOUS**" menu and then press the OK button



By using the arrows, select the "**SMART KEY**" menu and validate with the OK key.



By using the arrows, select the function to assign to the key, and then validate with the OK key.

Special cycle menu: to access to the menu of special cycle selection.

Special cycle: to run the special cycle selected in the list of the available ones.

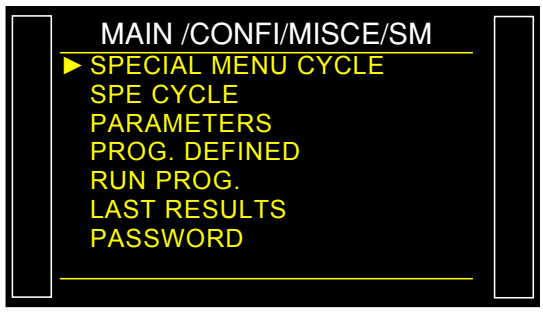
Parameters: to access directly to the program parameters menu.

Program defined: to access directly to the selected program parameters.

Run program: to access directly to the current program parameters (run program).

Last results: to access directly to the test results menu.

Password: to be allow to type the password for parameters access.



RESULTS MENU

This menu allows defining the destination for the storage of the results. *See sheet 638 **"Storage"**.*

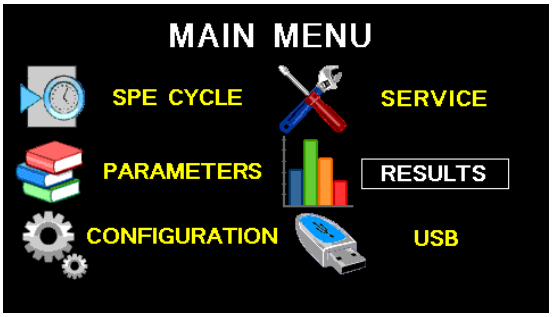
It also allows displaying the tests results under easy or statistics formats.

1. PROCEDURE

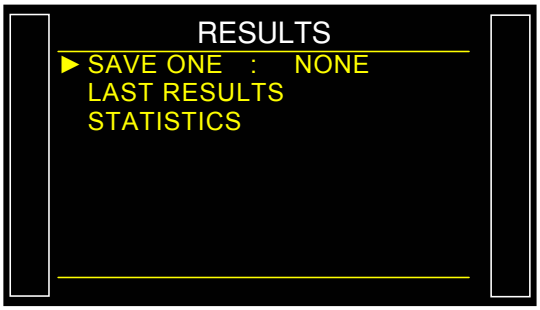
To access to the parameters menu, from the cycle menu, press the OK or ESC keys.

Then select the

menu and validate with the OK key..



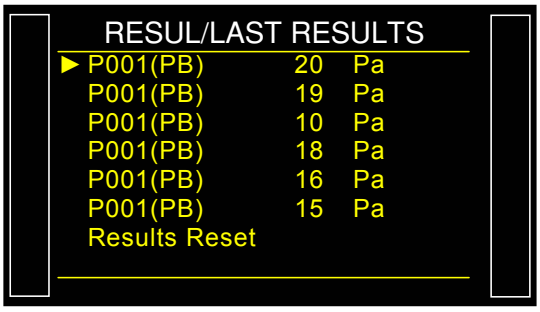
Select the menu with the ↑ ↓ keys and validate with the OK key.

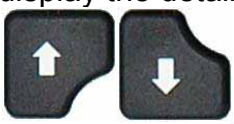


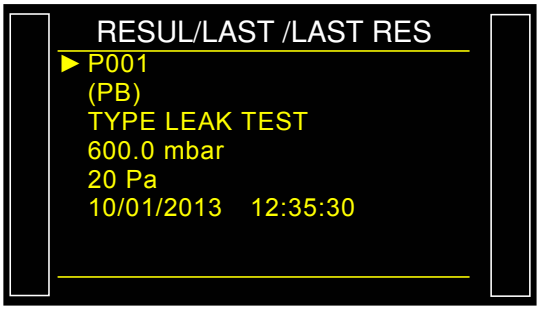
SAVE ON menu: to allow choosing the destination for the save file of the results. *See sheet 638 **"Storage"**.*

LAST RESULTS menu: to display the 6 lasts tests results carried on by the device.

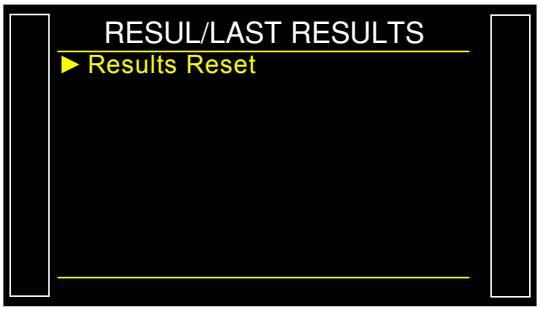
***Note**: these results are lost when the device is powering off.*



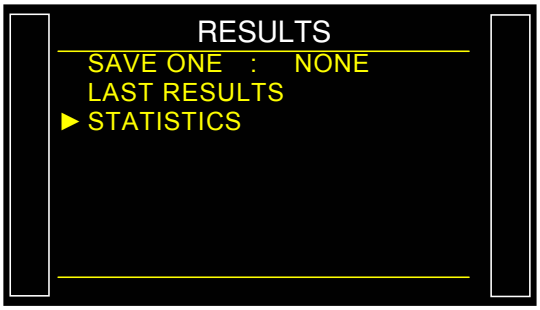
To display the detail of the result, select it with the  keys and validate with the key.



The "**Results Reset**" menu erases the complete list displayed.

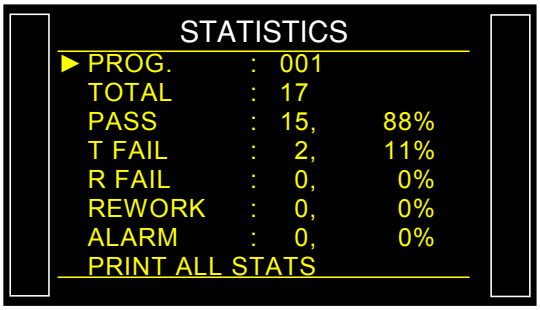


The **STATISTICS** menu displays the statistics of the results by program.



The results details are displayed in value and in percents by program.

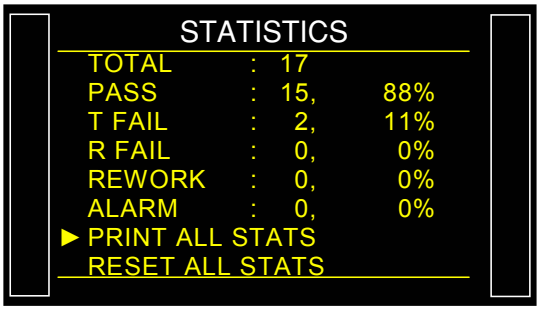
To change the program, select the "**PROG**" line, validate with the key, and then by using the key, choose the program number to display, validate with .



The "**PRINT ALL STATS**" menu allows sending all the statistics under frame format on the communication port.

***Note**: this menu appears if the print conditions are activated in the RS232 menu.*

The "**RESET ALL STATS**" menu resets all the statistics of all the programs.



USB

This menu make saves on USB memory stick. This is to be able to recover later the data to another device to clone it or for making security saves.

The save files have name of **PARA.BIN** for the parameters and are saved in the root of the memory stick in the folder **ATEQ\DATASAVE**.

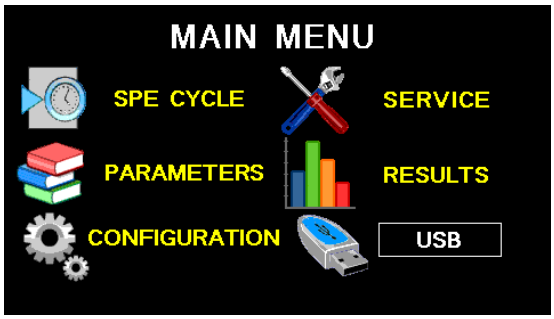
***Note**: only one device can be save on an USB stick. The previous file is deleted at each save.*

1. ADJUST PROCESS

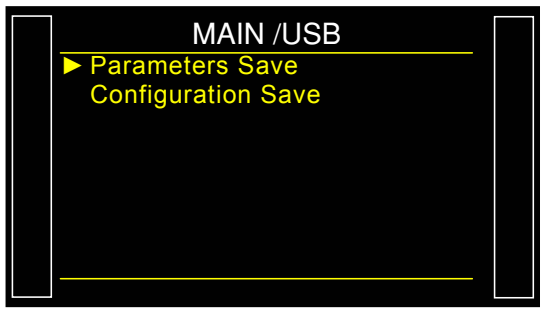
To access to the parameters menu, from the cycle menu, press the OK or ESC keys.

Then select the

menu and validate with the OK key.



Select the menu with the ↑ ↓ keys and validate with the OK key.



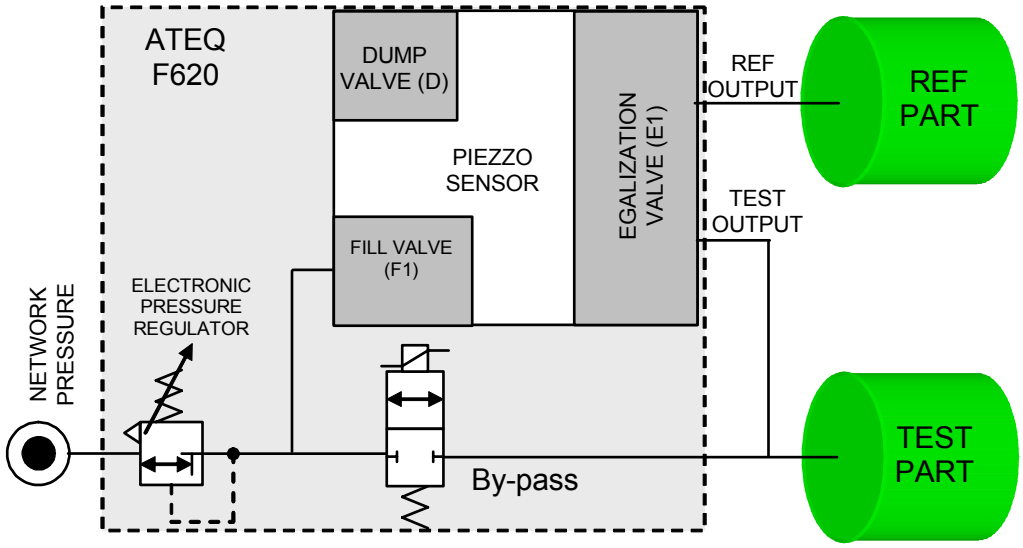
The device confirms the cloning.

The saving may take several seconds.

BY PASS (OPTION)

The option By-pass allows filling the test part quickly by increase the flow. This flow is passing thruw an additional valve (option) in parallel of the standard valve of the device.

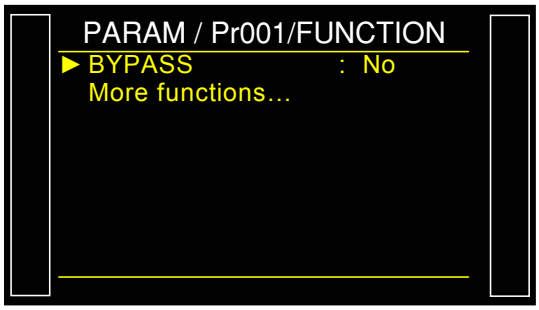
This valve is activated during the pre-fill, the fill or both and not activated during an auto-zero.



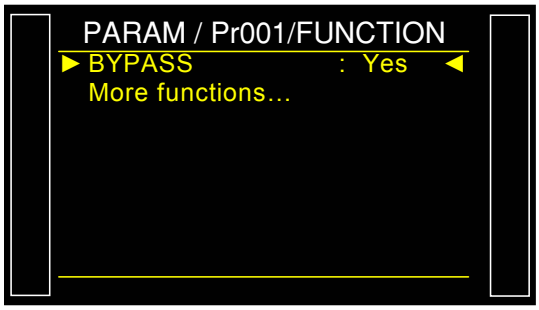
1. PROCEDURE

Activate the function or check if it checked.

Press the OK key, the cursor slide to the right hand.



By using the arrows, select "**Yes**" and validate with the OK key. Then adjust the pre-fill and fill values in the program parameters.



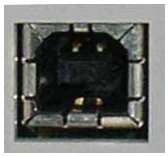
***Note**: adjust the pre-dump time parameter to 0 seconds for not dumping the part between the pre-fill and the fill.*

ELECTRIC CONNECTORS (F610)

1. FRONT FACE CONNECTORS

1.1. USB CONNECTOR

Allows the connection of miscellaneous compatibles **USB** devices. The connectors are located under the rubber cover.



USB connector to plug a PC.

USB connector to plug an UBS memory key or a remote control.

The USB connector rubber cover can be slightly deviated to the front for easy access to connectors.

Do not plug two USB components together!

2. LOWER SIDE CONNECTORS

Example of lower side face:

***Note**: following the versions and the purchase options, the customer device may be different from the example shown above.*

3. ELECTRIC CONNECTORS

3.1. SUPPLY THE DEVICE WITH 24 V DC

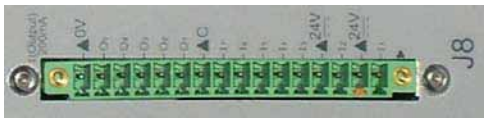
Two means are available to supply the device following its configuration.

3.1.1. Supply the device with 24 V DC - 2A on the M12 connector

Plus the fitted power supply to the dedicated M12 Connector.

- Pin 2 : + 24 V DC.
- Pin 4 : ground 0 V.

3.1.2. Supply the device with 24 V DC - 2A on the relay board



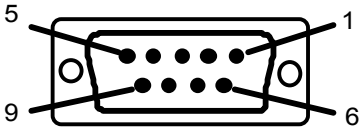
Connect by using the following mean:

- 24 V DC on the pins 2 or 4.
- 0 V on the pin 16.

See the paragraph 4.2. "**Connector I/O all or nothing**".

3.2. RS232 CONNECTOR PRINTER / MODBUS OR PROFIBUS

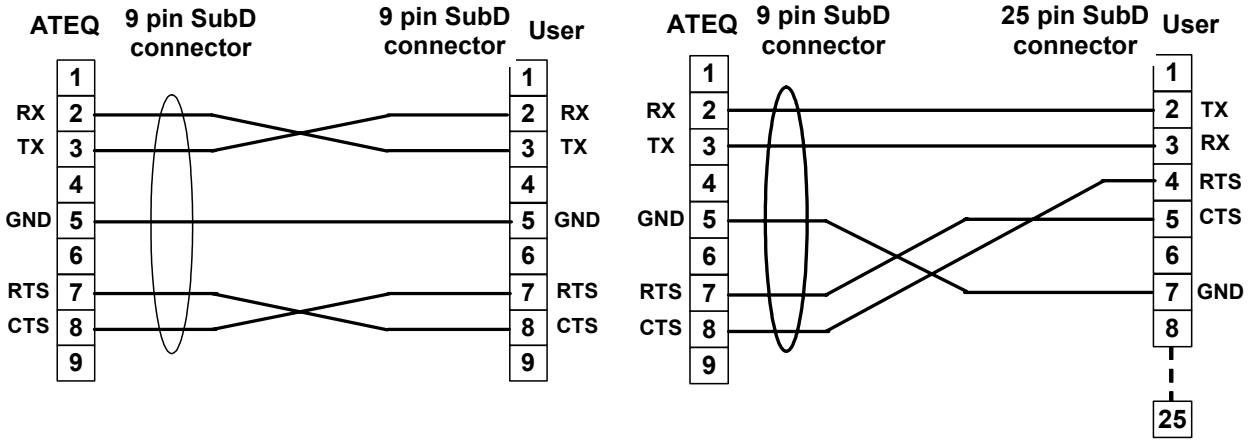
3.2.1. Connector in RS232 mode



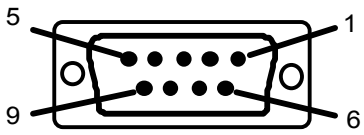
RS232: SubD 9 points male connector. To plug a printer, a bar code reader, a PC, a save module.

Pin 1	Not used	Pin 4	Not used	Pin 7	RTS request to send
Pin 2	RXD data input	Pin 5	Earth/Ground	Pin 8	CTS clear to send
Pin 3	TXD data output	Pin 6	Not used	Pin 9	Not used

3.2.1. 1) Examples of RS232 cables



3.2.2. Connector in Profibus mode

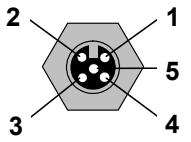


Profibus: SubD 9 points female connector.

Pin 1	PE (ground)	Pin 4	CNTR – A (repeater control signal)	Pin 7	Not used
Pin 2	Not used	Pin 5	DGND (logic ground)	Pin 8	Data Line B
Pin 3	Data Line A	Pin 6	VP (supply)	Pin 9	Not used

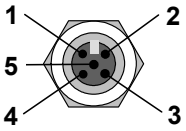
3.3. DEVICENET, PROFINET OR ETHERNET CONNECTORS (OPTION)

3.3.1. Devicenet Input (option)



To connect to others **ATEQ** devices (M12 male connector).

3.3.2. J2 Devicenet output (option)

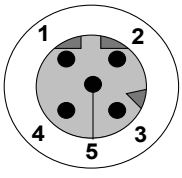


To connect to others **ATEQ** devices (M12 female connector).

3.3.3. Wiring Devicenet

Pin 1	Drain	Pin 3	V-	Pin 5	CAN_L
Pin 2	V+	Pin 4	CAN_H		

3.3.4. Input and output Profinet

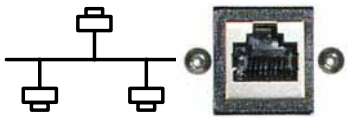


Ethernet / M12 pin assignement.

M12 female, D coded.

Pin 1	Ethernet Tx + (Transmit Data +)	Pin 3	Ethernet Tx - (Transmit Data -)
Pin 2	Ethernet Rx + (Receive Data +)	Pin 4	Ethernet Rx - (Receive Data -)
Pin 5	Not used		

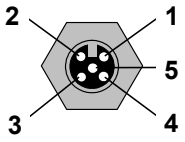
3.3.5. Input and output Ethernet/IP



Standard connection Ethernet TCP / IP protocol.

3.4. ANALOG OUTPUTS (OPTION)

This option is not possible if Devicenet or Profinet options are installed.



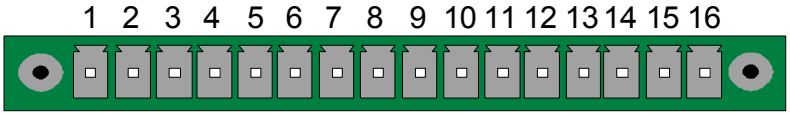
Connection for analog outputs.

- Pin 1: sensor 1 (plus).
- Pin 2: sensor 1 (minus).
- Pin 3: sensor 2 (plus).
- Pin 4: sensor 2 (minus).

4. OTHERS CONNECTORS

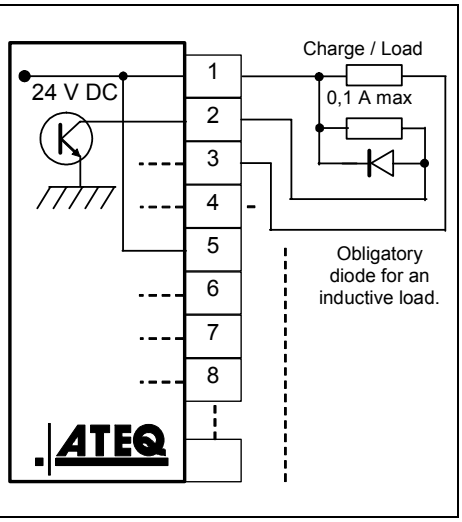
The following connectors are located under the gland cap:

4.1. CONNECTOR CODES 6 OUTPUT / 6 INPUTS (OPTION)



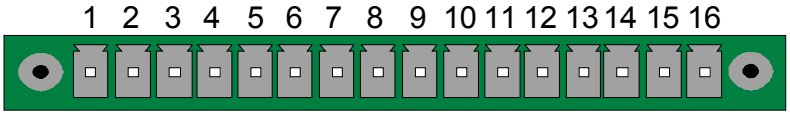
Output / inputs codes.

Pin 1	COMMUN (Outputs 1, 2, 3) + 24 V DC	Output codes 24V DC 100mA Max
Pin 2	Output n°1, open collector	
Pin 3	Output n°2, open collector	
Pin 4	Output n°3, open collector	
Pin 5	COMMON (Outputs 4, 5, 6) + 24 V DC	
Pin 6	Output n°4, open collector	
Pin 7	Output n°5, open collector	
Pin 8	Output n°6, open collector	
Pin 9	Input 0 (NPN or PNP)*	Inputs
Pin 10	Input 1 (NPN or PNP)*	
Pin 11	Input 2 (NPN or PNP)*	
Pin 12	Input 3 (NPN or PNP)*	
Pin 13	Input 4 (NPN or PNP)*	Analogue outputs
Pin 14	Ground	
Pin 15	Input 5 (NPN or PNP)*	
Pin 16	Ground	



** Inputs NPN or PNP following the strap position on the board.*

4.2. CONNECTOR I/O ALL OR NOTHING



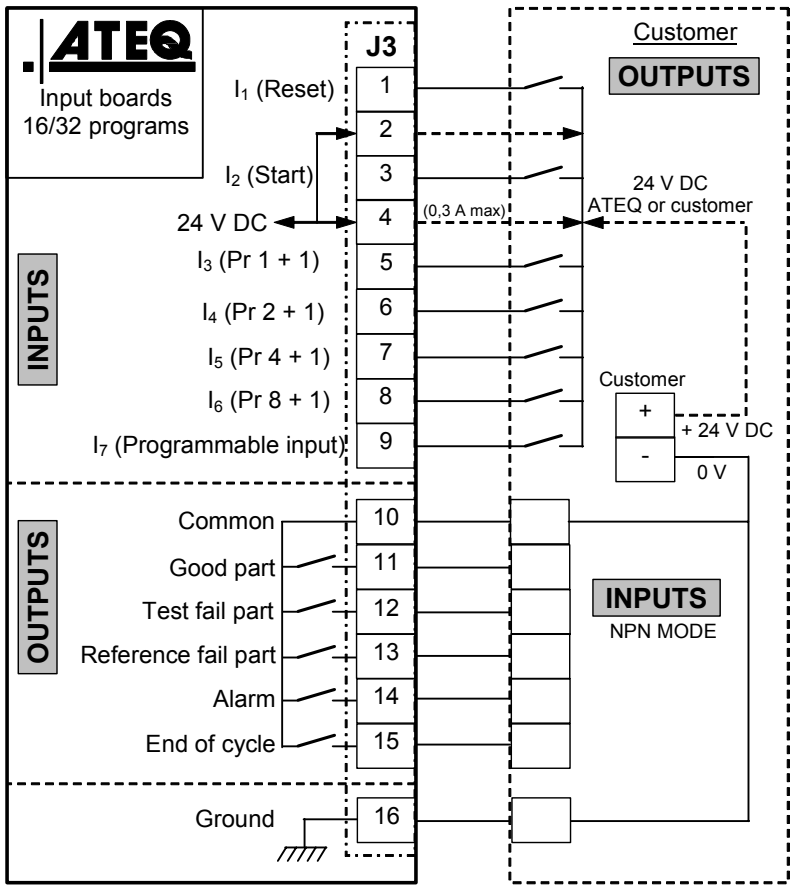
Inputs / Outputs All or Nothing.

Pin	Standard Mode	Compact Mode	
1	Input 1 RAZ	Input 1 RAZ	Inputs (Activation by 24 V DC) Common + 24 V = 0,3 A maximum
2	Common (+ 24 V)	Common (+ 24 V)	
3	Input 2 START	Input 2 START	
4	Common (+ 24 V)	Common (+ 24 V)	
5	Input 3 Program selection	Input 3 Program selection	
6	Input 4 Program selection	Input 4 Program selection	
7	Input 5 Program selection	Input 5 Program selection	
8	Input 6 Program selection	Input 6 Program selection	
9	Input 7 Program selection	Input 7 Program selection	
10	Floating common output	Floating common output	Outputs dry contacts 60V AC / DC Max 200mA Max
11	Output 1 Pass part	Output 1Pass part cycle 1	
12	Output 2 Fail Test part	Output 2 Fail part cycle 1 + Alarm	
13	Output 3 Fail reference part	Output 3 Pass part cycle 2	
14	Output 4 Alarm	Output 4 Fail part cycle 2 + Alarm	
15	Output 5 End of cycle	Output 5 End of cycle	
16	0 V	0 V	

The compact mode is a software function which is activated in the **CONFIGURATION/ AUTOMATISM / CHANGE I/O / OUTPUT** menu.

4.2.1. Connector (I/O Inputs/Outputs) graphical representation

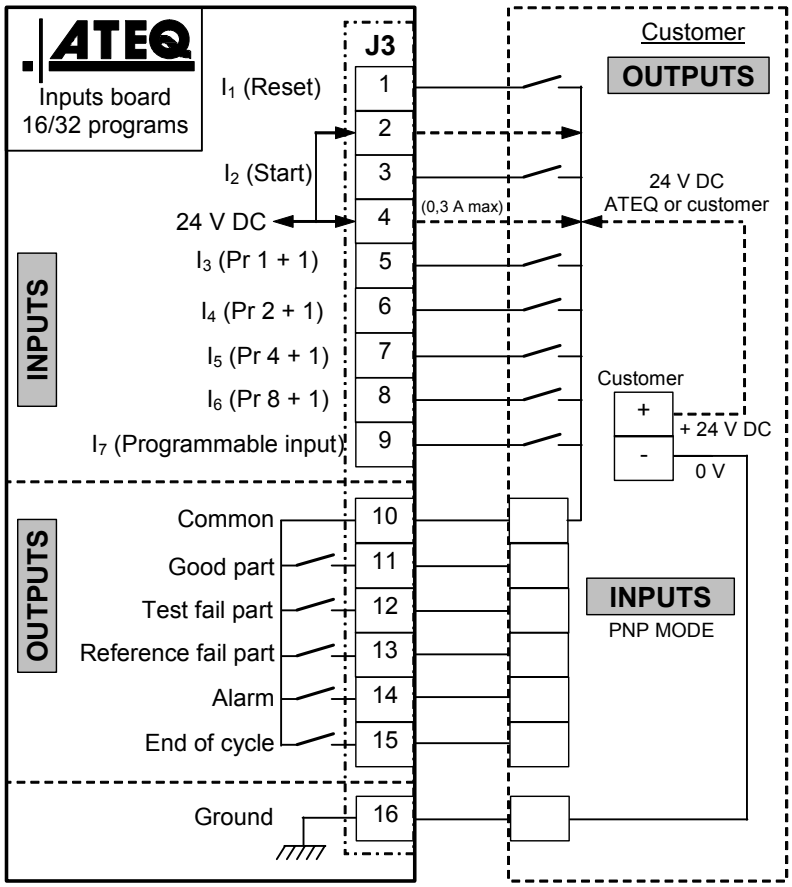
4.2.1. 1) PLC in NPN mode connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

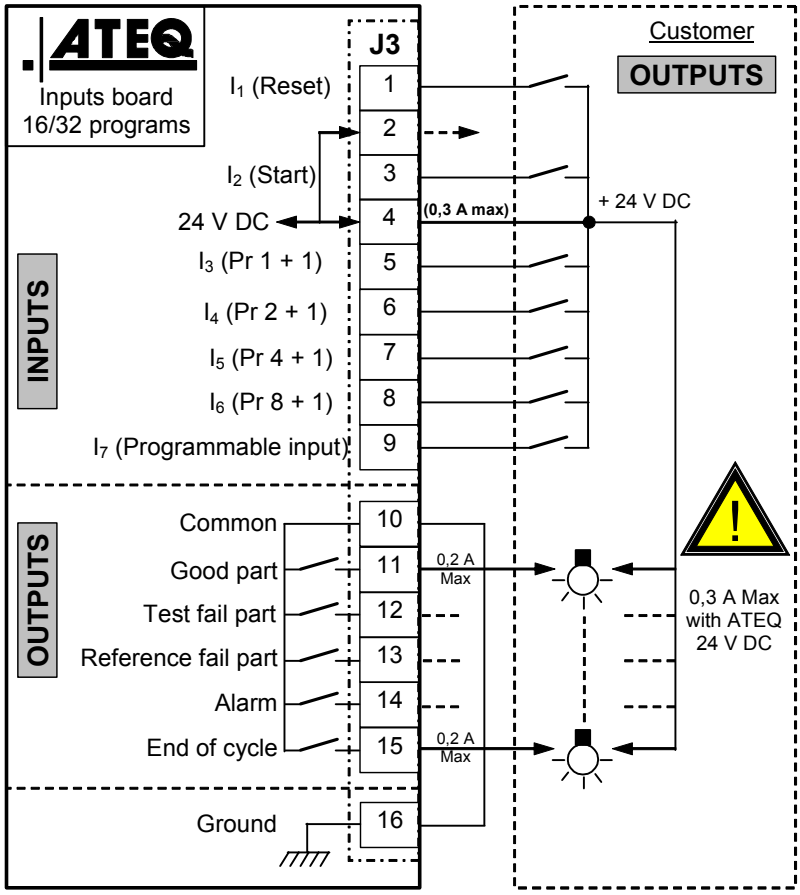
4.2.1. 2) PLC in PNP mode connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

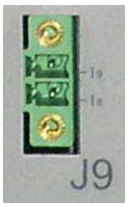
4.2.1. 3) Lights connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

4.3. PROGRAM SELECTION EXTENSION CONNECTOR (OPTION)



The J8 connector is to extend the selection to 128 programs.

This extension is always existing on the relay board.

Pin	Standard Mode	Compact Mode	
1	Input 8 Program selection	Input 8 Program selection 33 to 64.	Inputs (Activation by 24 V DC) Common + 24 V = 0,3 A maximum
2	Input 9 Program selection	Input 9 Program selection 65 to 128	

Combinations of pins to activate to select programs

Program number	**I/Oconn** Pin 5 (input 3)	**I/O Conn** Pin 6 (input 4)	**I/O Conn** Pin 7 (input 5)	**I/O Conn** Pin 8 (input 6)	**I/O Conn** Pin 9 (input 7)	**Extens** Pin 1 (input 8)	**Extens** Pin 2 (input 9)
1	0	0	0	0	0	0	0
2	**1**	0	0	0	0	0	0
3	0	**1**	0	0	0	0	0
4	**1**	**1**	0	0	0	0	0
5	0	0	1	0	0	0	0
6	**1**	0	**1**	0	0	0	0
7	0	**1**	**1**	0	0	0	0
8	**1**	**1**	**1**	0	0	0	0
9	0	0	0	**1**	0	0	0
10	**1**	0	0	**1**	0	0	0
11	0	**1**	0	**1**	0	0	0
12	**1**	**1**	0	**1**	0	0	0
13	0	0	**1**	**1**	0	0	0
14	**1**	0	**1**	**1**	0	0	0
15	0	**1**	**1**	**1**	0	0	0
16	**1**	**1**	**1**	**1**	0	0	0
17 à 32	x	x	x	x	**1**	0	0
33 à 64	x	x	x	x	x	**1**	0
65 à 128	x	x	x	x	x	x	**1**

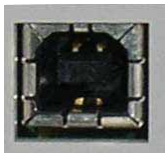
With **x** who takes the 0 or 1 value in function of the program number to be called.

ELECTRIC CONNECTORS (F620)

1. FRONT FACE CONNECTORS

1.1. USB CONNECTOR (FRONT FACE)

Allows the connection of miscellaneous compatibles **USB** devices. The connectors are located under the rubber cover.



USB connector to plug a PC.

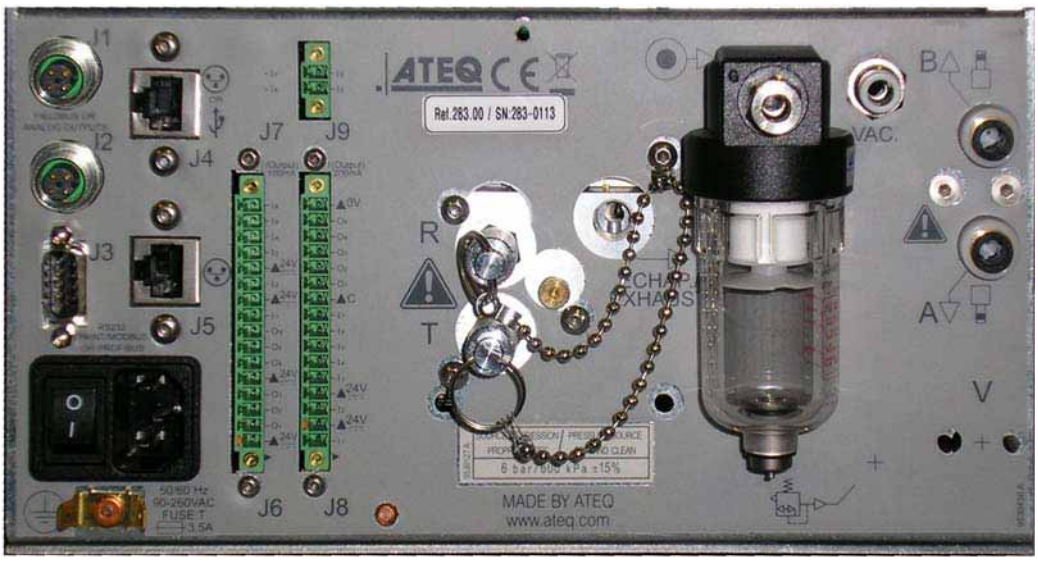
USB connector to plug an UBS memory key or a remote control.

The USB connector rubber cover can be slightly deviated to the front for easy access to connectors.

Do not plug two USB components together!

2. REAR SIDE CONNECTORS

Example of rear face:



***Note**: following the versions and the purchase options, the customer device may be different from the example shown above.*

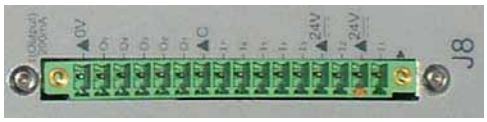
2.1. SUPPLY THE DEVICE WITH 24 V DC

Three means are available to supply the device following its configuration.

2.1.1. Supply the device with 24 V DC - 2A on the M12 connector

Connect the power supply fitted with the device. This option is not possible if the connector is used for the Fieldbus network.

2.1.2. Supply the device with 24 V DC - 2A on the relay board



Connect by using the following mean:

- 24 V DC on the pins 2 or 4.
- 0 V on the pin 16.

See the paragraph 2.3 "Connector I/O all or nothing".

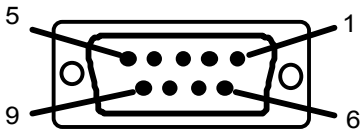
2.1.3. Power supply with 100 / 240 V AC and On/Off switch (option)

Supply the **ATEQ F620** with the built in power supply, with a voltage between 100 and 240 V AC.

I: ON / O: OFF.

2.2. RS232 CONNECTOR PRINTER / MODBUS OR PROFIBUS

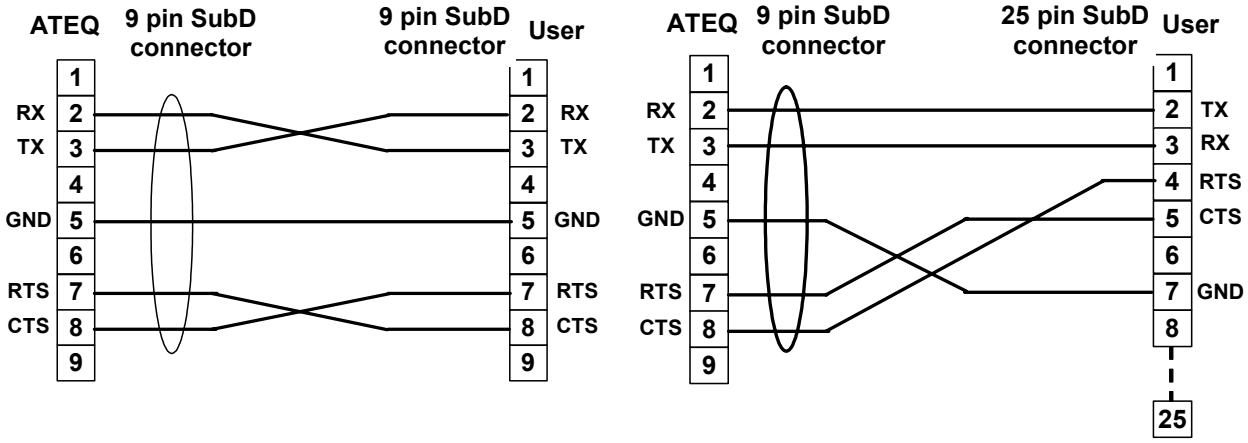
2.2.1. Connector in RS232 mode



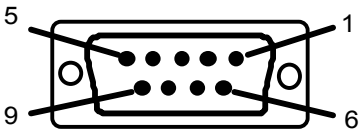
RS232: SubD 9 points male connector. To plug a printer, a bar code reader, a PC, a save module.

Pin 1	Not used	Pin 4	Not used	Pin 7	RTS request to send
Pin 2	RXD data input	Pin 5	Earth/Ground	Pin 8	CTS clear to send
Pin 3	TXD data output	Pin 6	Not used	Pin 9	Not used

2.2.1. 1) Examples of RS232 cables



2.2.2. Profibus mode connector

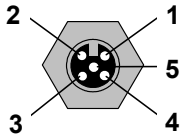


Profibus: SubD 9 points female connector.

Pin 1	PE (ground)	Pin 4	CNTR – A (repeater control signal)	Pin 7	Not used
Pin 2	Not used	Pin 5	DGND (logic ground)	Pin 8	Data Line B
Pin 3	Data Line A	Pin 6	VP (supply)	Pin 9	Not used

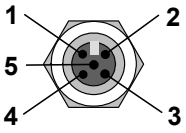
2.3. CONNECTOR DEVICENET INPUT OR ANALOG OUTPUTS (OPTION)

2.3.1. Devicenet Input (option)



To connect to others **ATEQ** devices (M12 male connector).

2.3.2. J2 Devicenet output (option)

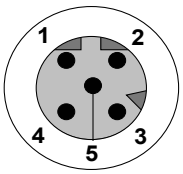


To connect to others **ATEQ** devices (M12 female connector).

2.3.3. Wiring Devicenet

Pin 1	Drain	Pin 3	V-	Pin 5	CAN_L
Pin 2	V+	Pin 4	CAN_H		

2.3.4. Input and output Profinet

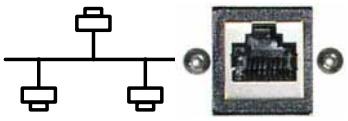


Ethernet / M12 pin assignement.

M12 female, D coded.

Pin 1	Ethernet Tx + (Transmit Data +)	Pin 3	Ethernet Tx - (Transmit Data -)
Pin 2	Ethernet Rx + (Receive Data +)	Pin 4	Ethernet Rx - (Receive Data -)
Pin 5	Not used		

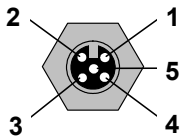
2.3.5. Input and output Ethernet/IP



Standard connection Ethernet TCP / IP protocol.

2.4. ANALOG OUTPUTS (OPTION)

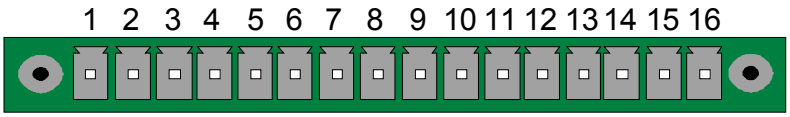
This option is not possible if Devicenet or Profinet options are installed.



Connection for analog outputs.

- Pin 1: sensor 1 (plus).
- Pin 2: sensor 1 (minus).
- Pin 3: sensor 2 (plus).
- Pin 4: sensor 2 (minus).

2.5. CONNECTOR I/O ALL OR NOTHING



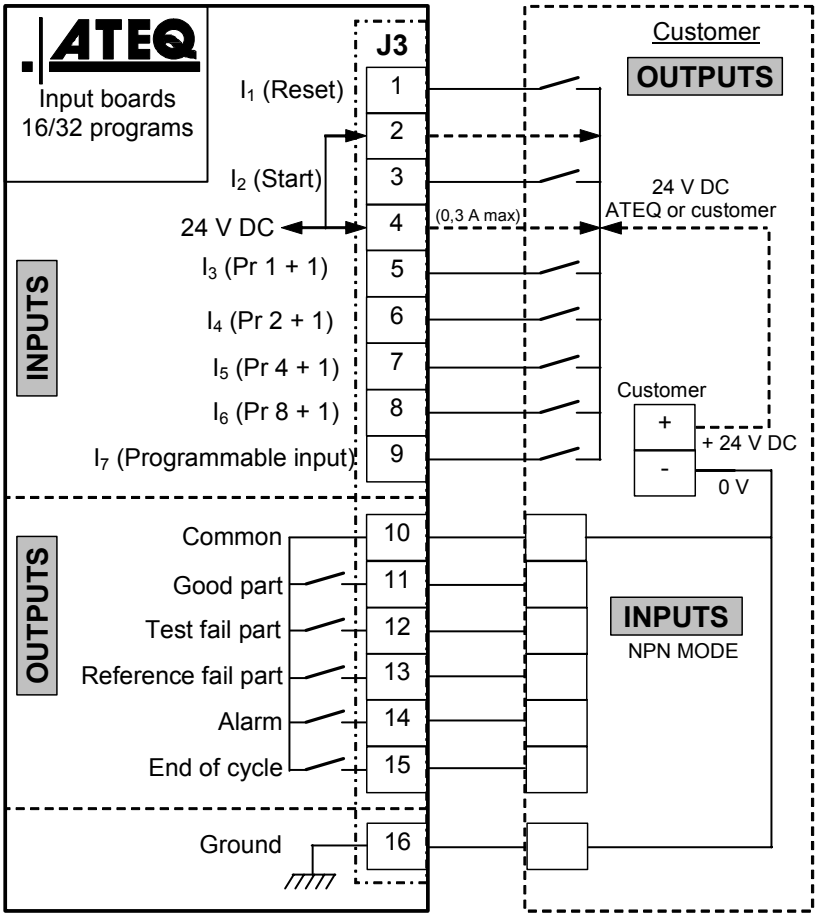
Inputs / Outputs All or Nothing.

Pin	Standard Mode	Compact Mode	
1	Input 1 RAZ	Input 1 RAZ	Inputs (Activation by 24 V DC) Common + 24 V = 0,3 A maximum
2	Common (+ 24 V)	Common (+ 24 V)	
3	Input 2 START	Input 2 START	
4	Common (+ 24 V)	Common (+ 24 V)	
5	Input 3 Program selection	Input 3 Program selection	
6	Input 4 Program selection	Input 4 Program selection	
7	Input 5 Program selection	Input 5 Program selection	
8	Input 6 Program selection	Input 6 Program selection	
9	Input 7 Program selection	Input 7 Program selection	
10	Floating common output	Floating common output	Outputs dry contacts 60V AC / DC Max 200mA Max
11	Output 1 Pass part	Output 1Pass part cycle 1	
12	Output 2 Fail Test part	Output 2 Fail part cycle 1 + Alarm	
13	Output 3 Fail reference part	Output 3 Pass part cycle 2	
14	Output 4 Alarm	Output 4 Fail part cycle 2 + Alarm	
15	Output 5 End of cycle	Output 5 End of cycle	
16	0 V	0 V	

The compact mode is a software function which is activated in the **CONFIGURATION/ AUTOMATISM / CHANGE I/O / OUTPUT** menu.

2.5.1. J3 connector (I/O Inputs/Outputs) graphical representation

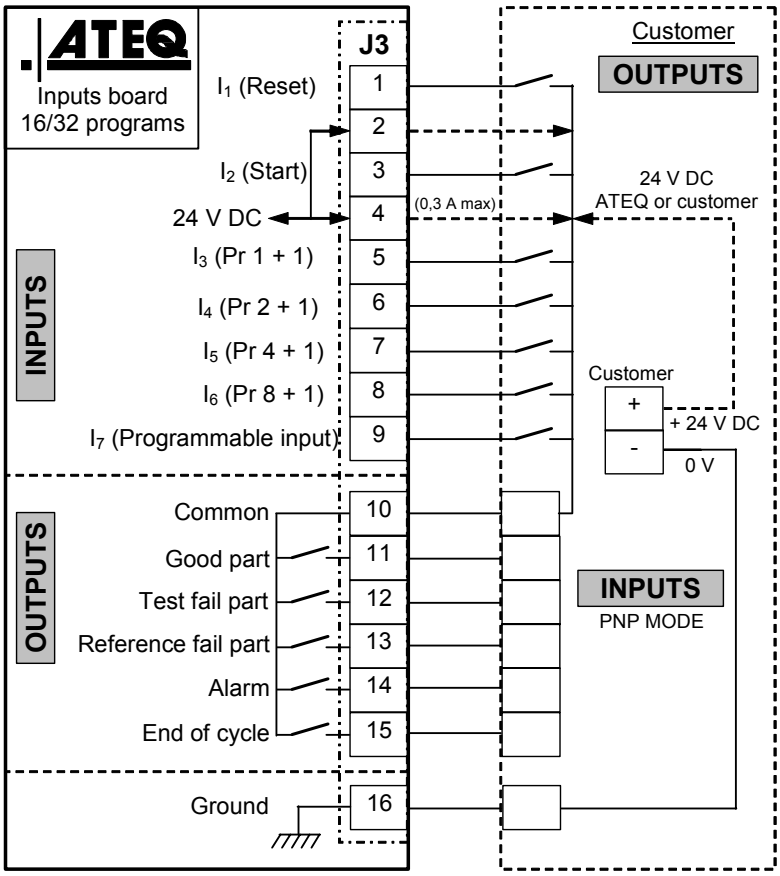
2.5.1. 1) PLC in NPN mode connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

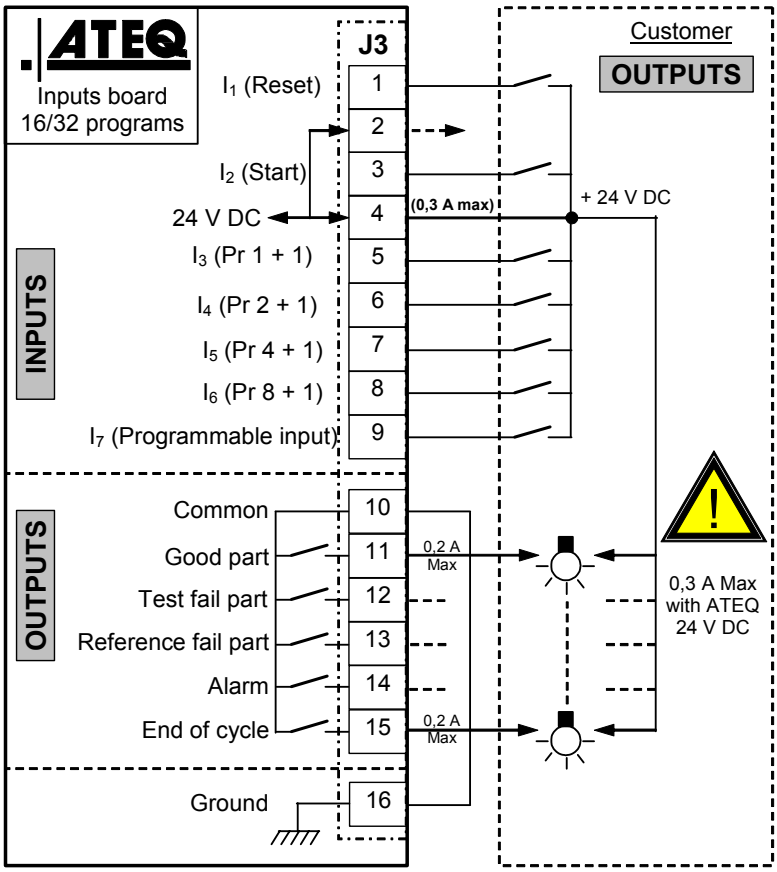
2.5.1. 2) PLC in PNP mode connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

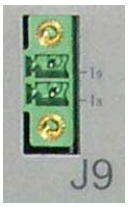
2.5.1. 3) Lights connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

2.6. PROGRAM SELECTION EXTENSION CONNECTOR (OPTION)



The J8 connector is an extension (option) to be able to select 128 programs.

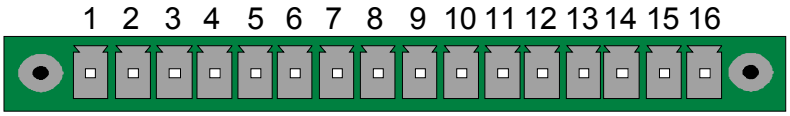
Pin	Standard Mode	Compact Mode	
1	Input 8 Program selection	Input 8 Program selection 33 to 64.	Inputs (Activation by 24 V DC) Common + 24 V = 0,3 A maximum
2	Input 9 Program selection	Input 9 Program selection 65 to 128	

Combinations of pins to activate to select programs

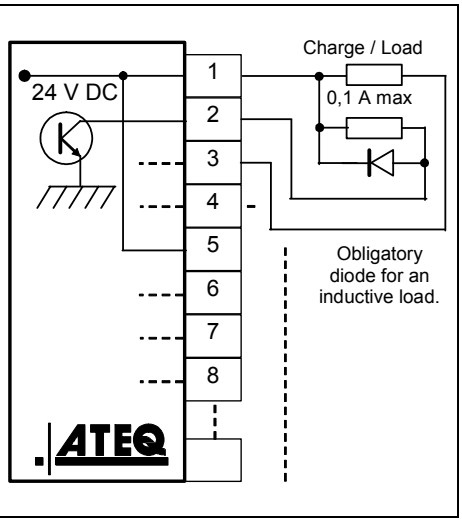
Program number	**J8** Pin 5 (input 3)	**J8** Pin 6 (input 4)	**J8** Pin 7 (input 5)	**J8** Pin 8 (input 6)	**J8** Pin 9 (input 7)	**J9** Pin 1 (input 8)	**J9** Pin 2 (input 9)
1	0	0	0	0	0	0	0
2	**1**	0	0	0	0	0	0
3	0	**1**	0	0	0	0	0
4	**1**	**1**	0	0	0	0	0
5	0	0	1	0	0	0	0
6	**1**	0	**1**	0	0	0	0
7	0	**1**	**1**	0	0	0	0
8	**1**	**1**	**1**	0	0	0	0
9	0	0	0	**1**	0	0	0
10	**1**	0	0	**1**	0	0	0
11	0	**1**	0	**1**	0	0	0
12	**1**	**1**	0	**1**	0	0	0
13	0	0	**1**	**1**	0	0	0
14	**1**	0	**1**	**1**	0	0	0
15	0	**1**	**1**	**1**	0	0	0
16	**1**	**1**	**1**	**1**	0	0	0
17 à 32	x	x	x	x	**1**	0	0
33 à 64	x	x	x	x	x	**1**	0
65 à 128	x	x	x	x	x	x	**1**

With **x** who takes the 0 or 1 value in function of the program number to be called.

2.7. CONNECTOR CODES 6 OUTPUT / 6 INPUTS (OPTION)

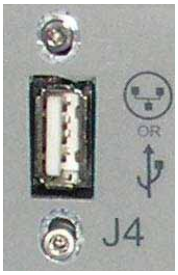


Output / inputs codes.

Pin 1	COMMUN (Outputs 1, 2, 3) + 24 V DC	Output codes 24V DC 100mA Max	
Pin 2	Output n°1, open collector		
Pin 3	Output n°2, open collector		
Pin 4	Output n°3, open collector		
Pin 5	COMMON (Outputs 4, 5, 6) + 24 V DC		
Pin 6	Output n°4, open collector		
Pin 7	Output n°5, open collector		
Pin 8	Output n°6, open collector		
Pin 9	Input 0 (NPN or PNP)*	Inputs	
Pin 10	Input 1 (NPN or PNP)*		
Pin 11	Input 2 (NPN or PNP)*		
Pin 12	Input 3 (NPN or PNP)*		
Pin 13	Input 4 (NPN or PNP)*	Analogue outputs	
Pin 14	Ground		
Pin 15	Input 5 (NPN or PNP)*		
Pin 16	Ground		

** Inputs NPN or PNP following the strap position on the board.*

2.7.1. Rear face USB (option)



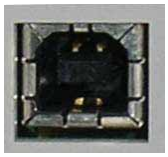
The additional USB connector allows plugging the remote control.

ELECTRIC CONNECTORS (F670)

1. FRONT FACE CONNECTORS

1.1. USB CONNECTOR

Allows the connection of miscellaneous compatibles **USB** devices. The connectors are located under the rubber cover.



USB connector to plug a PC.

USB connector to plug an UBS memory key or a remote control.

The USB connector rubber cover can be slightly deviated to the front for easy access to connectors.

Do not plug two USB components together!

2. REAR SIDE CONNECTORS

Example of rear face:

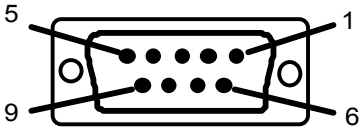
***Note**: following the versions and the purchase options, the customer device may be different from the example shown above.*

2.1. POWER SUPPLY WITH 100 / 240 V AC AND ON/OFF SWITCH (OPTION)

Supply the **ATEQ F620** with the built in power supply, with a voltage between 100 and 240 V AC.

I: ON / O: OFF.

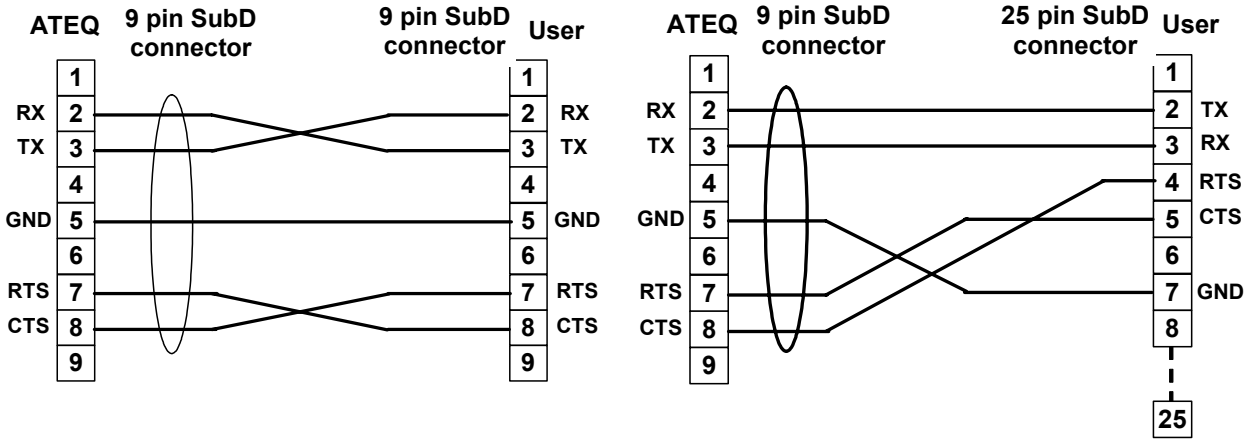
2.2. J1 RS232 CONNECTOR PRINTER



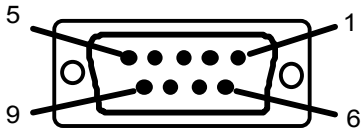
RS232: SubD 9 points male connector. To plug a printer, a bar code reader, a PC, a save module.

Pin 1	Not used	Pin 4	Not used	Pin 7	RTS request to send
Pin 2	RXD data input	Pin 5	Earth/Ground	Pin 8	CTS clear to send
Pin 3	TXD data output	Pin 6	Not used	Pin 9	Not used

2.2.1. 1) Examples of RS232 cables



2.2.2. Connector in Profibus mode

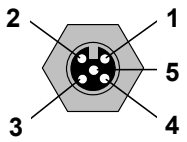


Profibus: SubD 9 points female connector.

Pin 1	PE (ground)	Pin 4	CNTR – A (repeater control signal)	Pin 7	Not used
Pin 2	Not used	Pin 5	DGND (logic ground)	Pin 8	Data Line B
Pin 3	Data Line A	Pin 6	VP (supply)	Pin 9	Not used

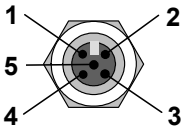
2.3. DEVICENET, PROFINET OR ETHERNET CONNECTORS (OPTION)

2.3.1. Devicenet Input (option)



To connect to others **ATEQ** devices (M12 male connector).

2.3.2. J2 Devicenet output (option)

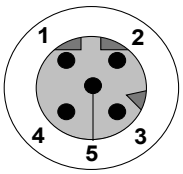


To connect to others **ATEQ** devices (M12 female connector).

2.3.3. Wiring Devicenet

Pin 1	Drain	Pin 3	V-	Pin 5	CAN_L
Pin 2	V+	Pin 4	CAN_H		

2.3.4. Input and output Profinet

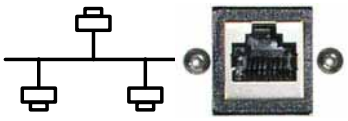


Ethernet / M12 pin assignement.

M12 female, D coded.

Pin 1	Ethernet Tx + (Transmit Data +)	Pin 3	Ethernet Tx - (Transmit Data -)
Pin 2	Ethernet Rx + (Receive Data +)	Pin 4	Ethernet Rx - (Receive Data -)
Pin 5	Not used		

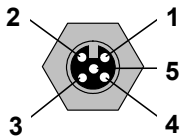
2.3.5. Input and output Ethernet/IP



Standard connection Ethernet TCP / IP protocol.

2.4. ANALOG OUTPUTS (OPTION)

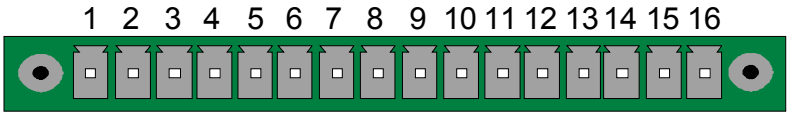
This option is not possible if Devicenet or Profinet options are installed.



Connection for analog outputs.

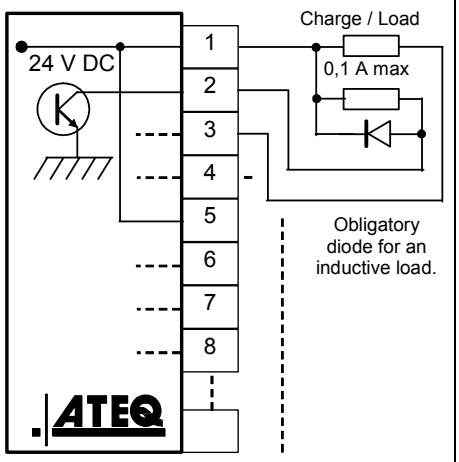
- Pin 1: sensor 1 (plus).
- Pin 2: sensor 1 (minus).
- Pin 3: sensor 2 (plus).
- Pin 4: sensor 2 (minus).

2.5. CONNECTOR CODES 6 OUTPUT / 6 INPUTS (OPTION)



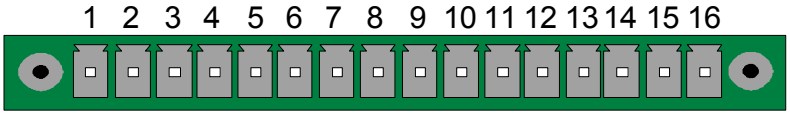
Output / inputs codes.

Pin 1	COMMUN (Outputs 1, 2, 3) + 24 V DC	Output codes 24V DC 100mA Max
Pin 2	Output n°1, open collector	
Pin 3	Output n°2, open collector	
Pin 4	Output n°3, open collector	
Pin 5	COMMON (Outputs 4, 5, 6) + 24 V DC	
Pin 6	Output n°4, open collector	
Pin 7	Output n°5, open collector	
Pin 8	Output n°6, open collector	
Pin 9	Input 0 (NPN or PNP)*	Inputs
Pin 10	Input 1 (NPN or PNP)*	
Pin 11	Input 2 (NPN or PNP)*	
Pin 12	Input 3 (NPN or PNP)*	
Pin 13	Input 4 (NPN or PNP)*	Analogue outputs
Pin 14	Ground	
Pin 15	Input 5 (NPN or PNP)*	
Pin 16	Ground	



** Inputs NPN or PNP following the strap position on the board.*

2.6. J7 CONNECTOR I/O ALL OR NOTHING

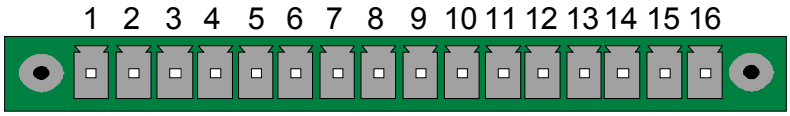


Inputs / Outputs All or Nothing.

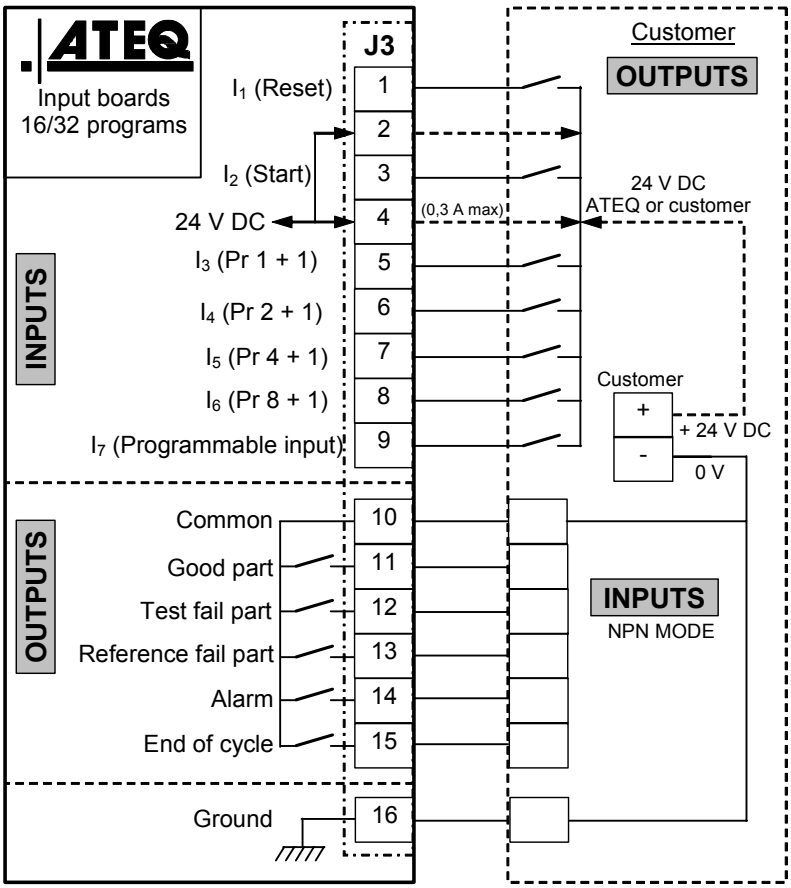
Pin	Standard Mode	Compact Mode	
1	Input 1 RAZ	Input 1 RAZ	Inputs (Activation by 24 V DC) Common + 24 V = 0,3 A maximum
2	Common (+ 24 V)	Common (+ 24 V)	
3	Input 2 START	Input 2 START	
4	Common (+ 24 V)	Common (+ 24 V)	
5	Input 3 Program selection	Input 3 Program selection	
6	Input 4 Program selection	Input 4 Program selection	
7	Input 5 Program selection	Input 5 Program selection	
8	Input 6 Program selection	Input 6 Program selection	
9	Input 7 Program selection	Input 7 Program selection	
10	Floating common output	Floating common output	Outputs dry contacts 60V AC / DC Max 200mA Max
11	Output 1 Pass part	Output 1Pass part cycle 1	
12	Output 2 Fail Test part	Output 2 Fail part cycle 1 + Alarm	
13	Output 3 Fail reference part	Output 3 Pass part cycle 2	
14	Output 4 Alarm	Output 4 Fail part cycle 2 + Alarm	
15	Output 5 End of cycle	Output 5 End of cycle	
16	0 V	0 V	

The compact mode is a software function which is activated in the **CONFIGURATION/ AUTOMATISM / CHANGE I/O / OUTPUT** menu.

2.6.1. J3 connector (I/O Inputs/Outputs) graphical representation



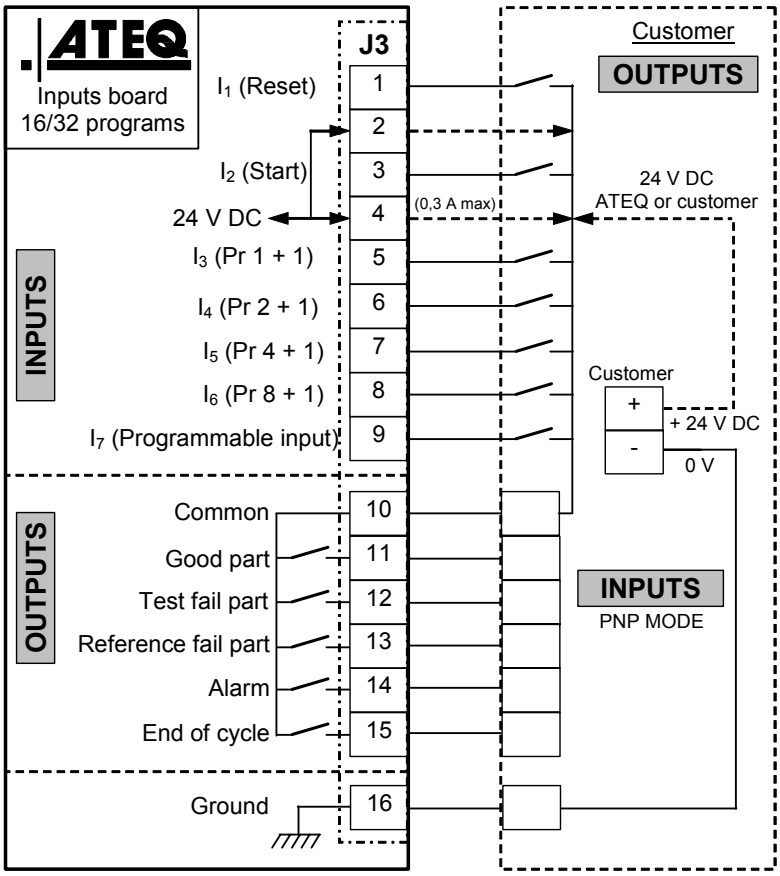
2.6.1. 1) PLC in NPN mode connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

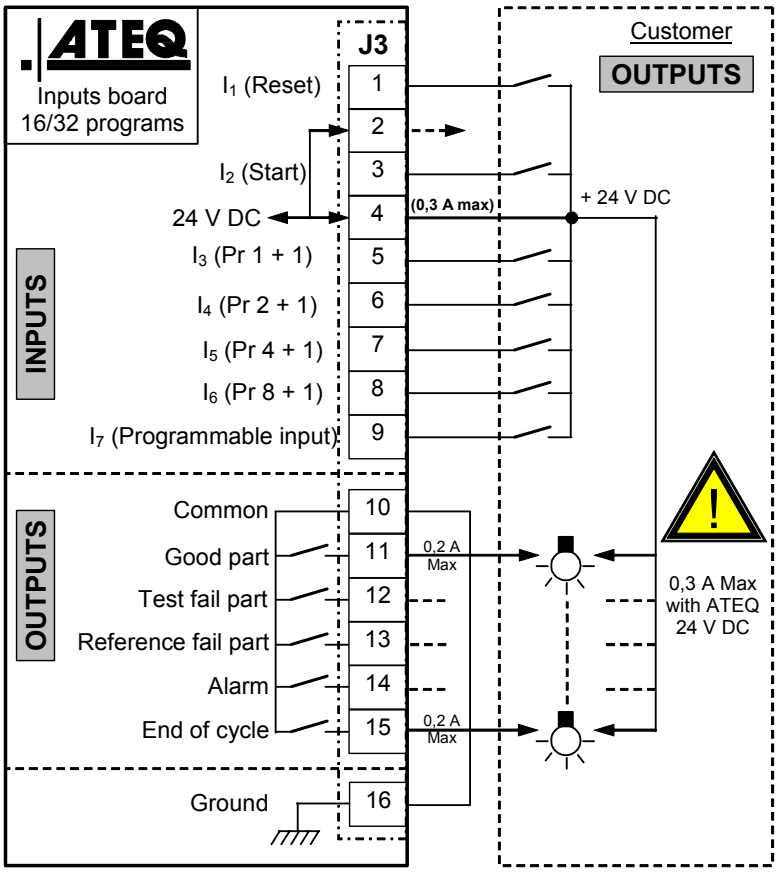
2.6.1. 2) PLC in PNP mode connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

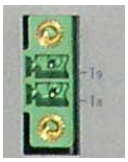
2.6.1. 3) Lights connection



***Note**: The 24V power supply must be provided by the internal power supply of the ATEQ instrument (0,3A maximum) **OR** through an external power supply provided by the customer.*

In the case of customer external supply, the ATEQ instrument can be supply by the 2 and 4 pins on the J3 connector too.

2.7. J6 CONNECTOR (OPTION)



The J6 connector is an extension (option) to be able to select 128 programs.

Pin	Standard Mode	Compact Mode	
1	Input 8 Program selection	Input 8 Program selection 33 to 64.	Inputs (Activation by 24 V DC) Common + 24 V = 0,3 A maximum
2	Input 9 Program selection	Input 9 Program selection 65 to 128	

Combinations of pins to activate to select programs

Program number	**J7** Pin 5 (input 3)	**J7** Pin 6 (input 4)	**J7** Pin 7 (input 5)	**J7** Pin 8 (input 6)	**J7** Pin 9 (input 7)	**J6** Pin 1 (input 8)	**J6** Pin 2 (input 9)
1	0	0	0	0	0	0	0
2	**1**	0	0	0	0	0	0
3	0	**1**	0	0	0	0	0
4	**1**	**1**	0	0	0	0	0
5	0	0	1	0	0	0	0
6	**1**	0	**1**	0	0	0	0
7	0	**1**	**1**	0	0	0	0
8	**1**	**1**	**1**	0	0	0	0
9	0	0	0	**1**	0	0	0
10	**1**	0	0	**1**	0	0	0
11	0	**1**	0	**1**	0	0	0
12	**1**	**1**	0	**1**	0	0	0
13	0	0	**1**	**1**	0	0	0
14	**1**	0	**1**	**1**	0	0	0
15	0	**1**	**1**	**1**	0	0	0
16	**1**	**1**	**1**	**1**	0	0	0
17 à 32	x	x	x	x	**1**	0	0
33 à 64	x	x	x	x	x	**1**	0
65 à 128	x	x	x	x	x	x	**1**

With **x** who takes the 0 or 1 value in function of the program number to be called.

PNEUMATICS CONNECTORS

The pneumatics connectors are located on the rear side.

1. PNEUMATICS TEST OUTPUTS

These outputs enable parts to be connected (test, reference). The pressurization output is used for the addition of **ATEQ** accessories (Y valve).

Inputs / Outputs on the rear side of the **F620**:

Reference Output **R >**

Test Output **T >**

< Exhaust Output

< Pressurization Output

2. AUTOMATIC CONNECTOR A AND B (OPTION)

To drive pneumatics caps.

3. QUICK CONNECTORS (OPTION)

One quick connector may be mounted on the front panel of the instrument.

This connector is to check the calibration. It's used to check the test circuit and enables, by use of a calibrated leak, calculation of the equivalent pressure drop.

⚠ ***As this connector is part of the measurement circuit, all its connections must be air tight.***

4. PNEUMATIC SUPPLY

Air supply is via the filter located on the rear panel of the Air supply is via the filter located on the rear panel of the instrument.

The air must be clean and dry.

The supply pressure must always be between 4 and 8 bar (400 kPa and 800 kPa).

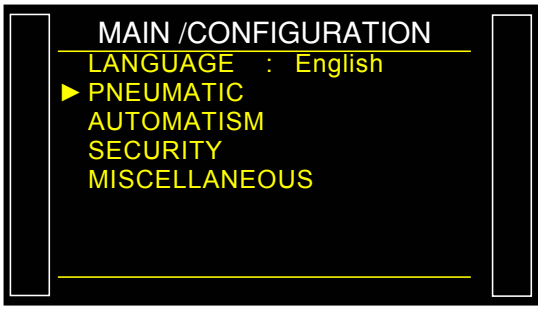
See sheet 677 "**Pneumatic supply**".

PRESSURE UNIT

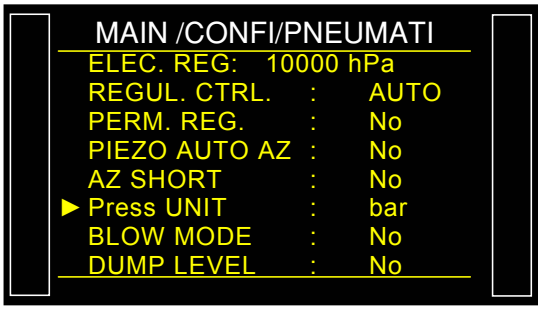
This parameter set the default pressure unit for the newest created programs and for the pneumatic configuration functions as "Dump level", "Permanent blow" etc...

1. PROCEDURE

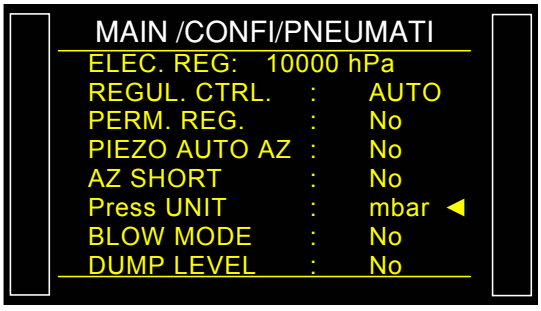
From the "**CONFIGURATION**" menu, select the "**PNEUMATIC**" menu and then press the OK button



By using the arrows, select the **Press UNIT** menu and validate with the OK key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
► Press UNIT : bar
BLOW MODE : No
DUMP LEVEL : No

By using the arrows, select the default pressure unit you want and validate with the OK key.


MAIN /CONFI/PNEUMATI
ELEC. REG: 10000 hPa
REGUL. CTRL. : AUTO
PERM. REG. : No
PIEZO AUTO AZ : No
AZ SHORT : No
Press UNIT : mbar ◄
BLOW MODE : No
DUMP LEVEL : No

***Note**: this unit can be modified in the parameters menu.*

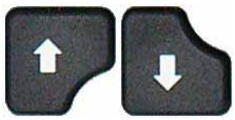
USB (AUTOMATISM)

The "**USB**" configures the USB link parameters. The **USB** can be connected to a printer or a computer for data collection.

1. PROCEDURE

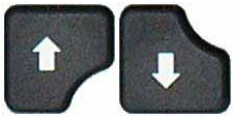
From the "**CONFIGURATION**" menu, select the "**AUTOMATISM**" menu and then press the

button



By using the arrows, select the "**USB**" menu and validate with the

key.

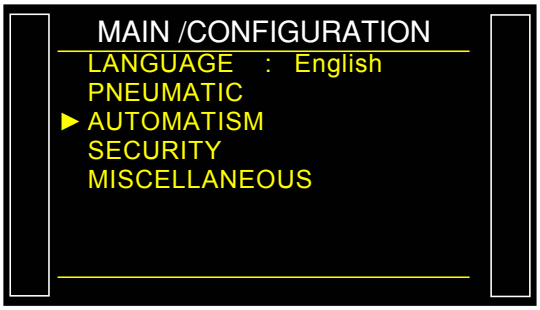


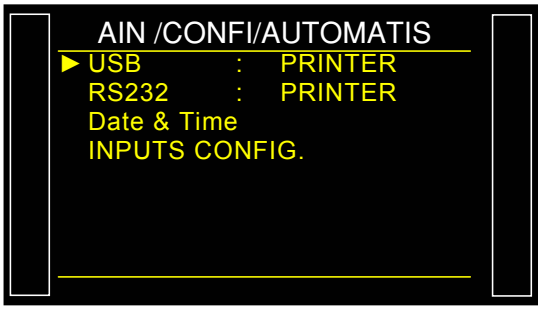
Then by using the arrows select the "**PRINTER**" menu, and then validate with the

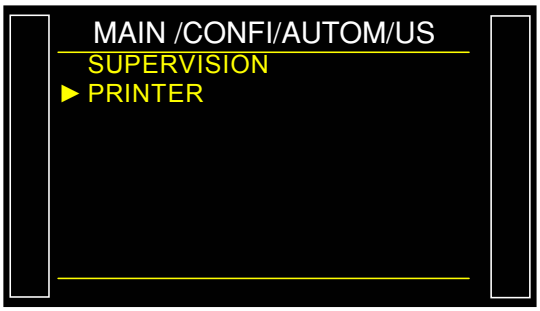
key.

Printer: to print (or send the frame) the program parameters as well as test results. When the option is activated, the USB broadcasts the test results after each cycle.

Supervision: in this mode, the device switch automatically in supervision mode when his plugged to a PC fitted with **ATEQ** proprietary software, through USB connection.

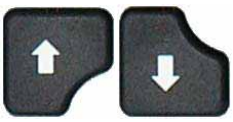






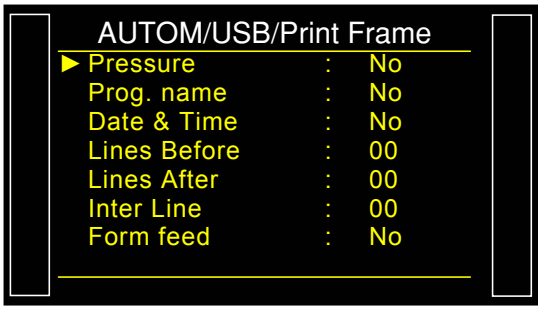
1.1. PRINTER MODE

The configuration menu of the link **PRINTER** is displayed.



By using the arrows, select the menu to configure and validate with the key.

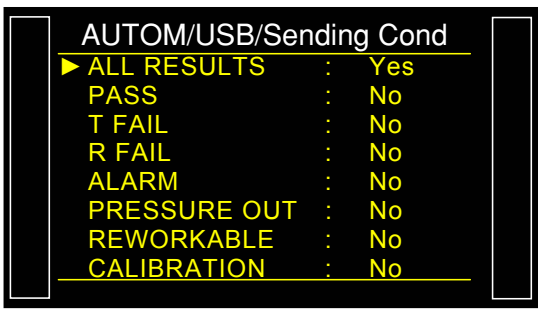
Print frame: This function enables the configuration of the result printout.



Associated parameters to be set:

- **PRESSURE** (Display test pressure),
- **Prog. Name** (Display program name when set),
- **Date & Time** (printing date and time),
- **Lines before** (nb of lines before result),
- **Lines after** (nb of lines after result),
- **Inter line** (space between each line),
- **Form feed** (new page).

Sending conditions: With this function you can choose which data is to be printed on the results sheet.



Associated parameters to be set:

- **ALL RESULTS** (all test results),
- **PASS** (nb of pass parts),
- **T. FAIL** (number of fail test parts),
- **R. FAIL** (nb of fail reference parts),
- **ALARM** (nb of alarm triggered),
- **PRESS OUT** (nb of incorrect pressure),
- **REWORKABLE** (nb of recoverable parts),
- **CALIBRATION**.

Examples of results frames.

Pass part frame:
<01>:
<01>:30/05/2012 16:52:01
<01>: 487.8 mbar:(OK): 029 Pa

Fail part frame:
<01>:
<01>:30/05/2012 16:53:36
<01>: 493.9 mbar:(DT): 114 Pa

Alarm frame:
<02>:
<02>:30/05/2012 16:55:24
<02>: 486.4 mbar:(AL): >> F.S. TEST

This frame is of the same type as the print parameters frame except that the different character strings follow each other and are separated by a punctuation mark which enables the various boxes to be entered automatically in Microsoft Excel.

This frame is operated by connecting a computer to the instrument's RS 232 link.

Columns detail:

1) Personalization
2) Program Number
3) Test result message.
4) Numerical Test Value.
5) Test unit.
6) Numerical pressure value.
7) Pressure Unit.
8) Alarm Message.

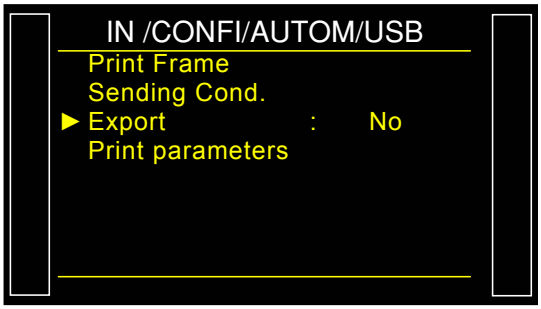
8') Bar Code (option: depends of the device version).

9) Date.
10) Time.

1.1.1. Export mode

Export: This function can be used to create and send a special results frame which can be processed by a PC using Microsoft Excel.

The characters and codes are from the ASCII table codes.



Exports examples: (the following example is from a F5 version v1.18p device).

The character "→" represents a tab HT (09h).

The character "□" represents a space (20h).

The character "↵ represents a carriage return CR (0Dh).

Example 1:

➢ **ASCII**

TEST→01→(OK)→□□000→Pa→□501.8→mbar→→→23/01/2006→17:54:13→↵

➢ **Hexa**

54 45 53 54 **09** 30 31 **09** 28 4F 4B 29 **09** 20 20 30 30 30 **09** 50 61 **09** 20 35 30 31 2E 38 **09** 6D 62 61 72 **09 09 09** 32 33 2F 30 31 2F 32 30 30 36 **09** 31 37 3A 35 35 3A 31 39 **09** *0D*

➢ **Detail**

1		**2**		**3**		**4**		**5**		**6**		**7**	**8 / 8'**	**9**		**10**	
TEST	→	01	→	(OK)	→	□□000	→	Pa	→	□501.8	→	mbar	→→→	23/01/2006	→	17:54:13	→↵
54 45 53 54	**09**	30 31	**09**	28 4F 4B 29	**09**	20 20 30 30 30	**09**	50 61	**09**	20 35 30 31 2E 38	**09**	6D 62 61 72	**09 09 09**	32 33 2F 30 31 2F 32 30 30 36	**09**	31 37 3A 35 35 3A 31 39	**09***0D*

Example 2:

➢ **ASCII**

TEST→01→(AL)→→→□□□0.0→mbar→PRESSURE□LOW→→23/01/2006→18:00:13→↵

➢ **Hexa**

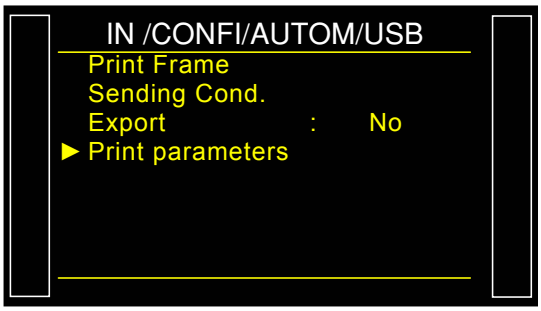
54 45 53 54 **09** 30 31 **09** 28 41 4C 29 **09 09 09** 20 20 20 30 2E 34 **09** 6D 62 61 72 09 50 52 45 53 53 55 52 45 20 4C 4F 57 **09 09** 32 33 2F 30 31 2F 32 30 30 36 **09** 31 38 3A 30 32 3A 31 36 **09** *0D*

➢ **Detail**

1		**2**		**3**		**4**		**5**		**8**	**8'**	**9**		**10**	
TEST	→	01	→	(AL)	→→ →	□□□0. 0	→	mbar	→	PRESSURE□L OW	→→	23/01/2006	→	18:00:13	→↵
54 45 53 54	**09**	30 31	**09**	28 41 4C 29	**09 09 09**	20 20 20 30 2E 34	**09**	6D 62 61 72	**09**	50 52 45 53 53 55 52 45 20 4C 4F 57	**09 09**	32 33 2F 30 31 2F 32 30 30 36	**09**	31 38 3A 30 32 3A 31 36	**09***0D*

1.1.2. Print parameters

Print parameters: by pressing this button, the program test parameters are printed or sent immediately.



Example of print parameters frame:

Version 03.10i
27/07/2012 15:26:14

Pr 01

TYPE : LEAK TEST
COUPL. A : 0.0 s
FILL TIME : 2.0 s
STAB TIME : 5.0 s
TEST TIME : 1.0 s
DUMP TIME : 0.0 s
Max FILL : 960.0
Min FILL : 600.0
Set FILL : 800.0
Test FAIL : 000
Ref. FAIL : 000

Pr 02

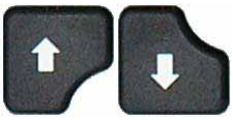
TYPE : LEAK TEST
COUPL. A : 0.0 s
FILL TIME : 5.0 s
STAB TIME : 4.0 s
TEST TIME : 4.0 s
DUMP TIME : 0.0 s
Max FILL : 600.0
Min FILL : 400.0
Set FILL : 500.0
Test FAIL : 100
Ref. FAIL : 000

CAN STATUS

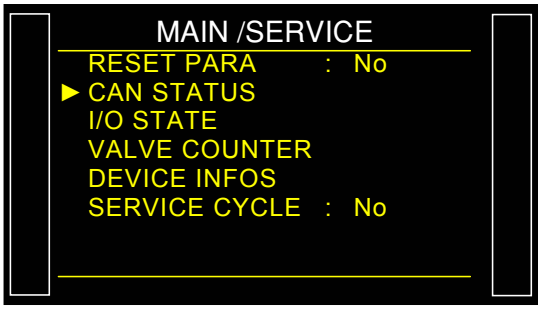
This is to check the communication between the various built in components through the CAN network (Controller Area Network).

If the network has a defect, restart the device. If the issue persists, contact the **ATEQ** After Sales Service.

1. PROCEDURE

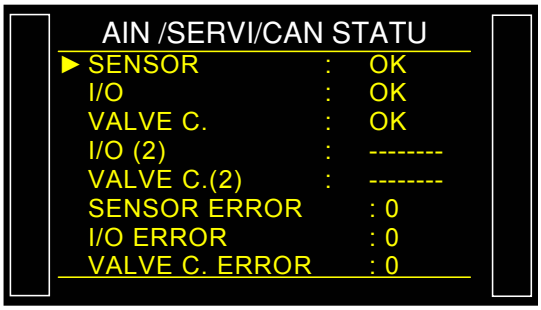
From the "**SERVICE**" menu, select the "**CAN STATUS**" menu by using the  arrows and press on

.



Each built in component may be displayed with "**OK**".

If the component if followed with "**-------**" is not built in the device.



If one or several board is not detected in the network, a communication error message is triggered.

See sheet # 684 "Error messages".

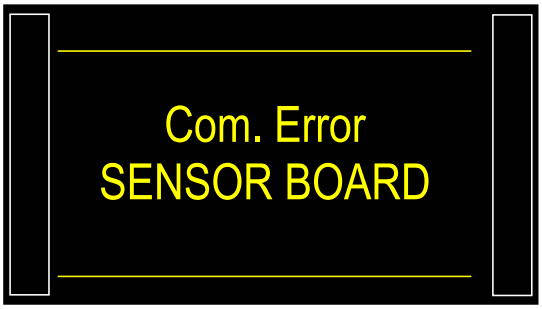
Each component must be displayed: "**OK**".

If the component if followed by "**-------**" it's because it's not installed in the device.

The three displayed counters: "**Sensor Error**", "**I/O error**" et "**Valve C. error**" are incremented when communications errors are detected.

For best functioning, these counters must be stay on 0.

***Note**: the counters are reset at each device power of.*



BURST TEST

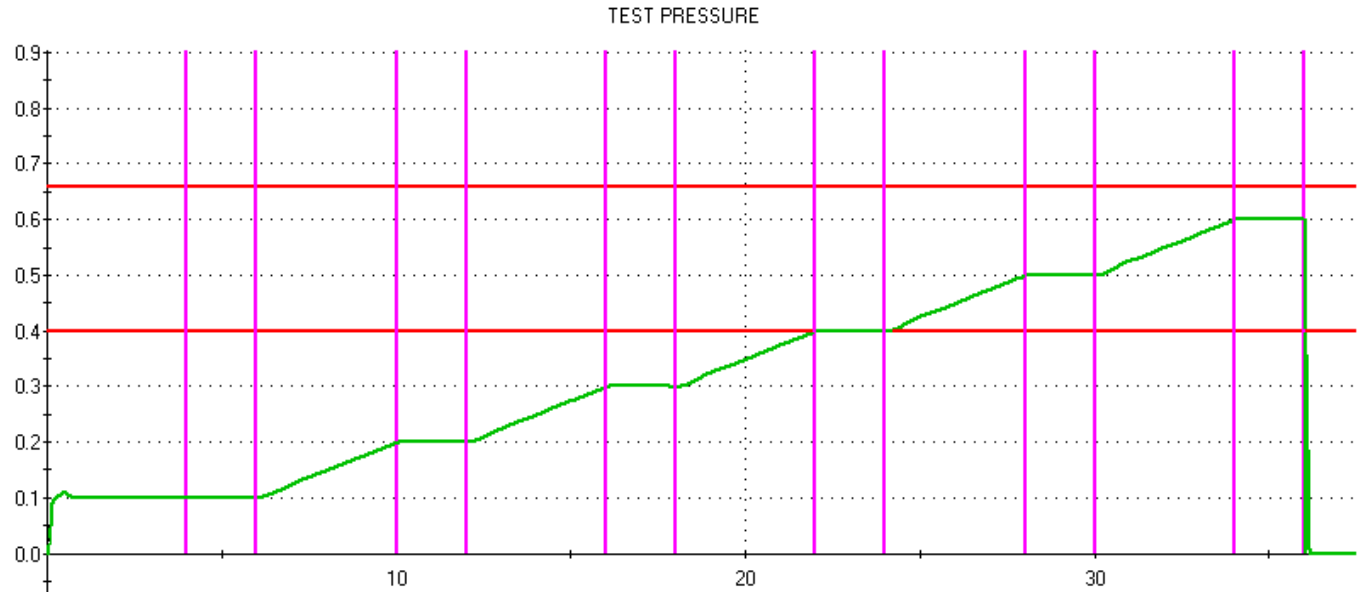
1. BURST TEST (OPTION)

The burst test allows following up the pressure which the part will burst.

To see the burst pressure, a pressure rise is generated with steps, once the pressure is dropping quickly, this pressure is recorded and the device will check if it is between the programmed thresholds.

The burst test runs currently only with volumes with a few tens cm^3.

Example:



The above burst test is configured with:

- Ramp with 6 steps.
- Rise time: 4 seconds.
- Step Time: 2 seconds.

1.1. BURST TEST PARAMETERS

1.2. COUPLING TIME

Coupling times A and B are the 1st timers of the cycle.

If there is no automatic connector, coupling time A is a part of the cycle.

If an instrument is fitted with an automatic connector, coupling time A delays the pressurization of the test part by allowing the activation of a first cycle connector at the test start. Coupling time B allows the activation of a second automatic connector.

1.2.1. Ramp

This parameter is the total time of the rise ramp. Total time to start from the pressure 0 to the instruction pressure. The device will calculate the rise speed in regard of this time and the final pressure.

1.2.2. Meas. Start (measurement start))

This parameter is the waiting time before the burst supervision. If it is set to 0, the supervision begins at the start of the ramp.

1.2.3. Level time (T. LEVEL)

This parameter is the level time of each steps. This time can't be greatter than the step time calculated by the total time and the steps number.

1.2.4. Dump Time (DUMP)

By default, the device has a dump time equal to zero. This time must be set with several tests.

1.2.5. Pressure unit (Press. UNIT)

The different units are: bar, mbar, PSI, Pa, kPa, MPa, Pts (points).

The "**Pts**" unit displays the values in points measured by the sensor during the test cycle.

1.2.6. Maximum fill

This function is used to set a maximum limit for the fill pressure. A warning is triggered if this limit is exceeded.

1.2.7. Minimum fill

This function is used to set a minimum limit for the fill pressure. A warning is triggered if this limit is not reached.

1.2.8. Start Fill

Ce paramètre détermine la pression est la

1.2.9. Fill instruction (Set Fill)

This is target pessure, electronic regulator only, to generate the pressure ramps.

1.2.10. Number of steps (N. OF STEPS)

This parameter is the number of steps in the burst test ramp (up and level).

1.3. AVAILABLE FUNCTIONS

The following list displays the available function for the leak test. For further information on these functions see the corresponding sheet :

- **Burst = OK**, this is to reverse the result, if the part will burst under pressure, it will be a pass part.
- **Name**, see sheet #602,
- **Sequencing**, see sheet #603,
- **Automatic connector**, see sheet #605,
- **Pre-fill and fill types**, see sheet #608
- **Dump Off**, see sheet #630,
- **External dump**, see sheet #655,
- **Valves codes and auxiliaries output 24 V**, see sheet #609,
- **End of cycle**, see sheet #610,
- **Mini valve**, see sheet #611,
- **Stamp**, see sheet #617,
- **Buzzer**, see sheet #639.

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